Lilah Church.

TRANSACTIONS

OF THE

British Society for the Study of Orthodontics.

JANUARY—MAY, 1912.

London :

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ORDINARY MEETING.

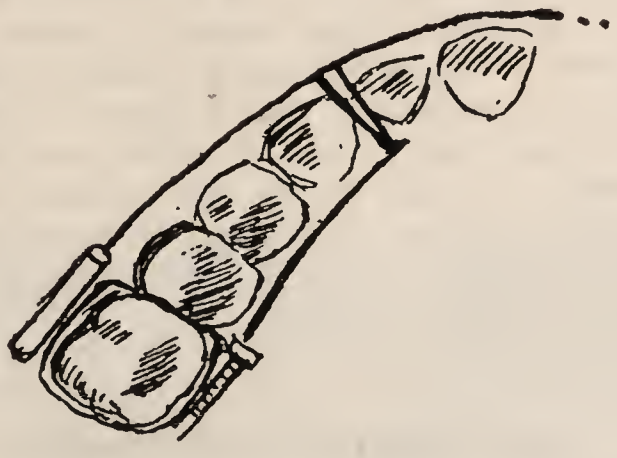
An ordinary meeting was held on Wednesday, January 10, the President, Mr. HARRY BALDWIN, in the chair.

An Interesting Case of Thumb-Sucking.

BY MR. W. WARWICK JAMES.

The case I have to show you is best understood by an examination of the models. The patient was a child of three years and six months when the first models were taken; three months later the second models were taken. The deformity was caused by thumb-sucking; it is not the commonest form of deformity, in my experience, due to this cause. Usually the displacement of the teeth is more marked on one side of the middle line than on the other. In right-handed children the projection of the upper incisors with flattening of the lower arch or even depression is greater on that side. It is rare in these cases to see the left side so deformed, but it is possible to discover that a child is left-handed if the deformity is so placed.

The children are so shy when asked to show the manner in which they suck the thumb or finger, etc., that it is not easy to ascertain the positions in which the thumb is placed. The thumb is usually placed with the nail directed downwards, and in the middle line in those cases where the deformity is central. In nearly all cases the pulp of the thumb is directed upwards. The chief interest of this case lies in the fact that prevention of thumb-sucking was the only treatment which effected such a remarkable change. The slides illustrate the point quite clearly.



Many devices were adopted to prevent the thumb-sucking, but with little avail, until very woolly gloves were used by day and woolly bags at night. The persistence of the parents and those in charge of the child needs to be most constant and is apt to be too tedious. In this case the habit has only quite recently been broken completely, it was continued intermittently and up to the age of eight years. The mother of the child suggested that if an air space could be retained between the thumb and the plate it might suffice. Curiously enough, this has succeeded. A piece of wire, V-shaped, was soldered to the transverse bar of an internal expansion arch; the free ends were soldered with the point of the V directed backwards. The model of the present condition of the mouth gives the position of this piece of wire. I am

not aware of the record of a similar case, and therefore thought the case of sufficient interest to bring before you.

The PRESIDENT stated that he had a case under observation which showed no difference after several years.

Mr. G. NORTHCROFT enquired if Mr. James had noticed that post-normal occlusion had resulted on the left side, and if treatment of this was contemplated.

Mr. HEDLEY VISICK asked Mr. James to describe the last appliance more fully. He described a similar case under his care where every preventive treatment had proved useless. He was greatly interested in seeing the slides that the normal pressure of the upper lip could result in so greatly modifying the arch in three months.

Mr. RUSHTON remarked that although the upper incisors had moved back the lower ones had not travelled forward. Had Mr. James noticed this ? Possibly later models would show an improvement.

Mr. THOMSON related a case where hypnotic suggestion had been used in the prevention of thumb-sucking. Although he had never used it personally he thought that one's object should be to get behind the mind of the child, and he was strongly in favour of methods of treatment other than mechanical.

Mr. JAMES, in reply, said that he was glad to see the amount of interest the case had raised. He could not say why the thumb was sucked unless it was to take the place of a rubber teat, after the use of this had been discontinued. Probably the nurse often put the finger or thumb into the child's mouth to pacify it. He cited a case of one of his own children who was just starting the habit and thought that was the explanation there. He enquired if nothing was done in the case of Mr. Baldwin's patient to stop the habit in early life. He had not brought the later models forward fearing the amount of discussion which would arise on the subject of the post-normal occlusion. Possibly the weight of the finger caused this by preventing the normal advancement of the mandible, which he believes to occur, although the change is not generally recognised. In a collection of cases of thumb-sucking and similar habits which he had formed, he found post-normal occlusion to occur commonly. The result of the lip pressure showed very well, but this was effective only if the lower lip were kept from passing behind the upper one. The lower incisors were still undoubtedly flattened, but a slight improvement was evident. Possibly in course of time this would correct itself. He thought that Mr. Thomson's idea might be very useful, he had found the patient so ashamed of the habit that he could seldom get it properly demonstrated.

The PRESIDENT announced that Mr. ROBERT HAROLD HEATH had been elected a member of the society.

The PRESIDENT then gave his

Inaugural Address.

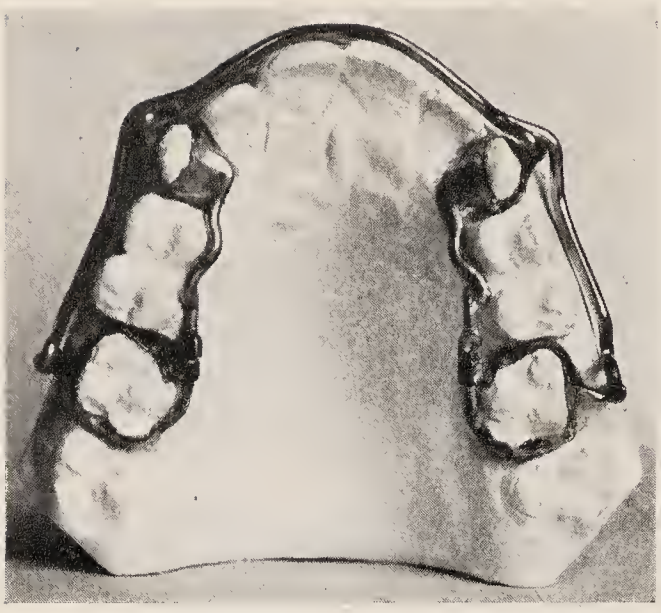
I am deeply grateful to you for the honour you have done me in electing me your president. It is an honour which brings home very forcibly one's own willingness of spirit and weakness in other departments, and at the same time makes one very sensible of your great kindness. I offer you my cordial thanks and hearty greeting. To-night's programme has upon it the item—" Inaugural address by President," but I am going to spare you a real oration, of which I am sure you would fain be relieved. The Society was admirably inaugurated by the address of its first president, and his words have been admirably reinforced by the addresses of following ones up to now. What strikes me

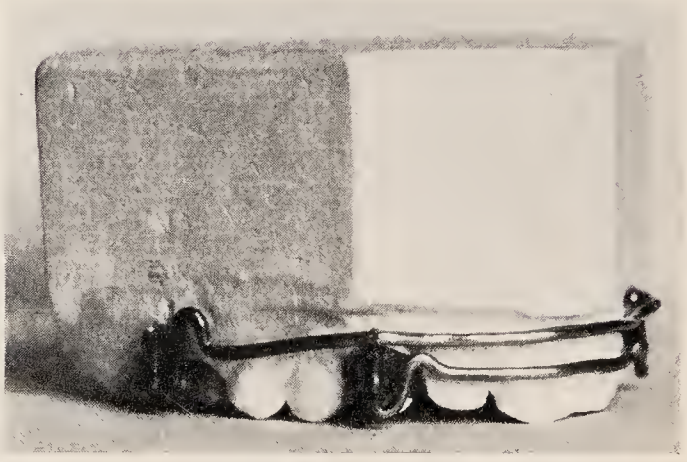
An Interesting case of Thumb-sucking.

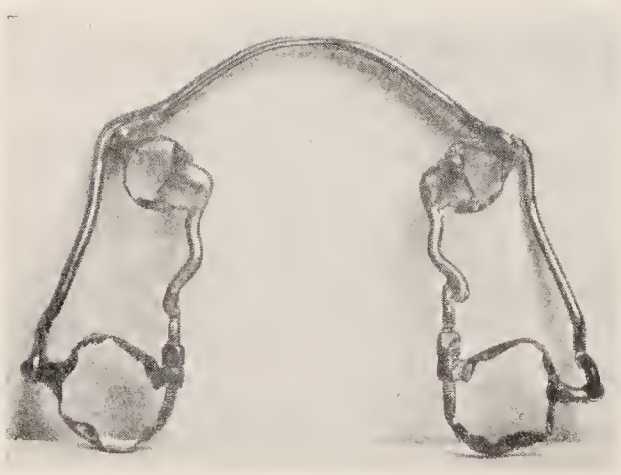
To Illustrate Mr. Warwick James' Paper.

Mr. H. C. Highton's Paper:

"The Use of Vertical Tubes."







as worthy of comment, however, is the great success which this society has proved. If we were to look round for reasons for this success we should not have far to seek. To begin with, the title of the society is a model of seductive humility and has easily attracted together a brotherhood of modest men naturally anxious to join in a hopeful quest of illumination upon a subject we feel we but very imperfectly comprehend. We are banded together " for the study," etc. Obviously, therefore, we start, not with cast-iron prejudices or belief in our own perfect knowledge, but with a feeling that ours is a fascinating subject which has lately entered upon pastures new, with long vistas of possibility, and the exploration of which we hope will afford ourselves intellectual pleasure and in effect will confer great benefits on the multitude of the unorthodont who require treatment, and will set equally or even to a greater extent in a preventative direction and tend to cause the rising up of a generation which shall grow naturally orthodont.

Another reason for its success is the free and easy air of the society. In the discussions a member is not debarred from getting up as often as he likes to take up new points as they arise ; and so the discussion takes on a truer character than is possible in the more formal *séances* of some other societies where a member may rise but once in the debate, try to say what at the moment he thinks he wants to say, and thereafter holds his peace. Then again I submit, that work on science and art of an orthodontic kind is a welcome relief from the monotony of the endless filling and extraction of teeth. All these factors, however, would hardly account for so great a success as the society has undoubtedly achieved. The truth is there was a real need for its existence. The new ideas of treatment, particularly of reciprocal traction, have opened up a new world in orthodontics, and that world demands a special detailed survey and investigation from both near and far points of view. The detail, necessarily occupying many meetings, makes much of the subject matter unsuitable for presentation to meetings of the British Dental Association or its branches ; still less to the Royal Society of Medicine. The perfect harmony, however, which exists between the Society and the British Dental Association is shown by their collaboration at the annual meetings of the British Dental Association and the fine exhibitions of models which have been set up by this Society at the request of the British Dental Association at those meetings.

The final justification for the existence of this Society rests on its achievement ; not only has it a record of a brilliant output of valuable work, but certainly much of this would never have seen the light without it. One of the lessons to be gathered from this work is that treatment of regulation cases should be commenced years earlier than was ever thought of a short time ago.

Prevention of irregularity of teeth and deformity of jaw has been in the mind of this society almost as much as treatment. Better treatment from early childhood is, I think, already having an effect as a prophylactic agency. In my opinion bad cases of irregularity are already getting less common, and this I attribute—

1st, to better attention to the removal of post-nasal stenosis ;

2nd, to the early and effective filling of carious cavities in temporary teeth ;

3rd, to the better feeding of young children by giving them food which requires exercise of jaws and teeth for its mastication.

The meetings of this Society present an admirable opportunity of obtaining a consultation of experts upon the models of cases about to be undertaken in practice. I wish more models of cases at this stage were brought up by members to be submitted in that way. Such consultations should prove of great benefit to all concerned. The greatest difficulty many of us experience in treating cases is the impossibility of getting the patients into the surgery often enough for constant adjustments. Some of our seaside and other towns have very numerous preparatory schools ; are, in fact, great educational resorts for young children. While at these schools children would have the opportunity of attending at the local dental surgeon's once a week or oftener if required. It often happens that no dental surgeon with special orthodontic knowledge has established himself in these centres ; but in some they have, and I think we should make an effort to get children, whose interests we think would thereby be best served, to be placed at school at one of those centres and the case transferred to the care of the resident practitioner. But I must occupy no more of your valuable time, but will conclude these remarks by thanking you again and expressing the hope that this session will result in rich additions to our knowledge, in extension of interest in this particular department of study, and in augmentation of the kindly feelings of esteem and confraternity which happily exist between all our members.

Mr. Rushton in a few well-chosen remarks thanked the President in the name of the society.

Mr. H. C. Highton then read his communication entitled

The Use of Vertical Tubes.

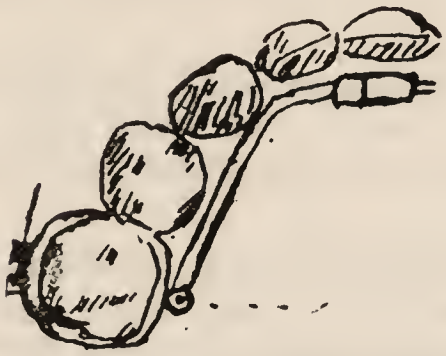
I wish to bring before your notice the use of vertical tubes in connection with the expansion of the arch, as I believe they are particularly efficient in cases where there is a crowded condition in the canine region. It is also a very useful device in moving out the premolars and molars and can be used to obtain a rapid expansion of the deciduous teeth, and to relieve the narrow arch which so commonly occurs in the mouths of our small patients. The device as illustrated consists of clamp bands attached to the six-year molars or second temporary molars, and a squeeze band on the permanent or deciduous canines. A vertical tube about half the length of the ordinary horizontal tube is soldered to the external surface of the clamp band and the squeeze band on the canine, and a wire is soldered from the end of the extension of the thread on the internal surface of the clamp band to the lingual surface of the squeeze band and made to touch the lingual surfaces of the premolars or first deciduous molars on either side. Two German silver wire arches are then bent up as illustrated, the first to extend from the vertical tube of the molar to the tube of the molar on the opposite side, the second from the tube of one canine to the other. These arches are bent up as follows—First a straight piece to fit in the tube, then a parallel band to a position above the highest point of the tube, then a slight bend downwards, and the wire is then curved around to the opposite side where it is adapted in a similar manner. The

arch from the molar tubes is allowed to rest just above the necks of the teeth, and that from the canines in a position just below this arch as shown on the slide. The bands are cemented in position and the arches inserted subsequently, the expansion being brought about by giving the arches a slight bend outwards, and in addition the vertical portions which fit into the tubes can also be given a slight outward bend. The spring of the arches enables them to be retained in position and this attachment can be increased by allowing a portion of the wire to protrude from the tube and giving it a suggestion of a twist inwards and filing it over slightly in that direction. The device can best be constructed by fitting the bands to the mouth, taking an impression, and then the tubes and arches can be fitted on a plaster cast. The lower device is, of course, constructed in the reverse manner to that suggested for the upper arch.

In the discussion which followed, Mr. NORTHCROFT thought a most important point was the danger of getting the molar expansion arch too close to the gum over the upper central incisors; as the arch expanded it would flatten and might cause much damage to the soft tissues, especially if the patient were not kept under constant observation. He also pointed out that the force applied would probably result in moving the first molars forward as well as outward.

Mr. CHAPMAN enquired at what age the apparatus might be used.

Mr. HIGHTON said he thought at 5 or 6 years and later. He had only so far used it in one case.



Sleeve soldered vertically, containing threaded rod soldered at right angles to bar of internal expansion arch. The rod is passed from below upward through the sleeve. A small nut holds the arch in position.

Mr. JAMES enquired if there were any possible advantage over the ordinary expansion arch with horizontal tubes. He thought the many disadvantages negatived its use, especially the forward movement that the molar teeth must take.

The PRESIDENT described the apparatus which Dr. Boyne had recently shown. He (the President) had used this apparatus in several cases, with complete success.

Mr. BLAABERG thought that if the wired arch were made to stand away sufficiently from the front teeth the weight of the lip would hold it fairly rigid and then there could be no forward movement of the first molar teeth. In any case the adjustment of the S arrangement would prevent it. He thought that the use of vertical tubes would result in making the roots of the teeth expand even more than the crowns, and so widen the palate; this was a great advantage.

Mr. RUSHTON enquired if any form of arch ever expanded the palate itself as well as a properly adjusted expansion plate?

Mr. CHAPMAN expressed the view that the main principle of the apparatus Mr. Highton showed was to obviate the use of ligatures, but in this instance it had been done at the cost of cleanliness on account of the two arches making this a much more serious difficulty than it need be. He preferred the single buccal arch with a lingual wire to expand the remaining teeth as far forward as the canine when necessary ; in the case of young patients he considered this principle especially valuable, as the second temporary molars could be used as the arch teeth and then the lingual wire would extend back to the first permanent molar and forward to the first temporary molar or canine ; in such a case the resistance is distributed behind the arch teeth as well as in front of it, a much more favourable arrangement than that first mentioned.

The PRESIDENT remarked that it seemed quite easy to remove the expansion arches for cleaning.

Mr. HIGHTON said they were not intended to be removed by the patient.

Mr. JAMES said that he had successfully expanded the arch in a case of complete lingual occlusion in a patient under 4 years of age, by the use of an internal expansion arch in which the tubes were placed vertically on the lingual aspect.

Mr. CHAPMAN asked Mr. James what material he used, and if he depended on the spring of the arch or on the jack screw.

Mr. JAMES said that he had purchased the arch—it was probably hard German silver. He thought that the turning of the nuts together with the contact did it.

Mr. POLLITT enquired if Mr. Highton's appliance would be used with any lower appliance which might be in use at the same time. It appears that lower teeth must impinge on the apparatus behind the upper canine teeth.

Mr. HIGHTON, in reply, said that the S loops at the back of the arch prevented it from cutting into the gum over the incisor teeth. It was not intended that the patient should be sent away for long periods. He thought that there was always forward movement of the teeth carrying the anchor bands in fixed appliance and did not consider that there was any especial risk in the apparatus he had described. He agreed with Mr. Chapman in his remarks about wire ligatures, and thought there was more bodily movement of the teeth and alveolus—not of the crowns only. The use of the lingual wire in addition brought all the force of expansion to bear between the first permanent molars and the canine teeth—where it was needed, and tipping of the teeth was prevented. He did not think the apparatus would impede the action of any lower appliance used and considered the biting on the part behind the temporary canines an advantage rather than otherwise, and it helped expansion and took the place of a biting plate. Another advantage was the greater expansion it gave in the canine region, where it was usually most needed. The advantage over an expansion plate was only in saving of time in young patients, and the fact that it was a fixture. With expansion plates the child would require to wear the plates a year or two.

Mr. RUSHTON said that the expansion also of the bone was his point. He could assure Mr. Highton that with a properly constructed expansion plate there was a very considerable expansion in a short time. He could not understand how a complete bodily movement of teeth and alveolus could be produced by this device.

Dr. J. Sim Wallace brought forward his communication,

Reasons why the First Upper Permanent Molar may not always occupy its Normal Position.

In opening this discussion I should like to refer to the fact that the movement of a body is always relative to something else. It is my intention to indicate that the upper permanent molar, which according to the Angle classification and treatment may be regarded as a fixed point is not by any means so if its position relative to the bones of the face, the maxillæ especially, is considered. Firstly, if the second temporary upper molar is prematurely extracted, the first permanent molar may travel forward so as to come more or less close to the first temporary upper molar ; whereas when under similar circumstances the second temporary molar is retained, it does not move forward in this way. Similarly if the second premolar is extracted the first molar may come forward so as to touch the first premolar, and in a case such as was referred to by our President towards the end of last session, the first molar may come to be close up against the canine, and it is not that the six front teeth have tipped back, for these even in this case were apparently in a protruded position. When the surrounding forces equilibrate each other the tooth moves in the direction of the resultant force, and there is no reason for supposing that the first upper permanent molar is an exception. In the case of antero-posterior movement of the first molar this may be brought about by the crushing into place of the second molar, *i.e.*, increased pressure from behind or, as has been indicated, by relieving the pressure from the front, as by the extraction of a deciduous molar or a premolar, or even simply by mouth-breathing, allowing the normal pressure of the lips on the front teeth to fall into abeyance.

In answer to a question by Mr. Rushton, the President said that Dr. Sim Wallace took the position that the first upper permanent molar was not a fixed point and that, when the second temporary molars were extracted, forces from behind might push the first premolars forward. Evidently the points for discussion were " Can the six-year molar be looked on as a fixed point. If not, what are the forces which move it ? " He agreed with Dr. Sim Wallace's remarks and cited a case in point.

Mr. Thomson brought forward X-ray lantern slides of three cases, showing molar movements.

The President mentioned a case of a lady where the first wisdom teeth were situated in the place usually occupied by first permanent molars.

Mr. J. G. Turner said that it was an undoubted fact that in the upper jaw the first permanent molar did sometimes move forward, but why no one knew. The only thing he had learnt was that everyone was agreed on this point. If this tooth were extracted the back teeth moved forward, and the front teeth might move backward also, but if the first temporary molars were extracted, only the backward movement of the front teeth took place, which was obviously due to the force exerted by the lips and cheeks. Did Dr. Sim Wallace suggest that there was a forward growth of bone in the front of the mouth ?

Mr. Sheldon Friel said that he had travelled over from Ireland to hear Dr. Sim Wallace's communication, and was rather disappointed, as he had hoped to get some new information on the subject. He had recently examined twenty-five cases classified as Angle Class II., unilateral, and in only one was the lower jaw in distal occlusion. In the remaining twenty-four upper teeth had travelled forward. Although

these cases had up to the present been classified as belonging to Class II., he considered actually they were Class I. Professor Grünberg, of Berlin, had recently introduced an instrument named the Symmetriscope, by which one could determine what teeth had moved and the amount of movement, after extraction. The movement shown was relative to the teeth on the opposite side. The description of the instrument had been published in the Transactions of the Angle Alumni School. It was on the market and he had obtained one from Vienna and had found it extremely useful. Mr. Sheldon Friel then gave a blackboard illustration with explanations.

The PRESIDENT asked Mr. S. Friel if posterior teeth were taken as fixed points with the instrument ; if so, this vitiated all measurements.

Mr. RUSHTON asked if the teeth or a point on the cranium were the fixed points used.

Mr. FRIEL replied that the buccal lingual movement only was correct and the antero-posterior movement was only relative, owing to teeth being used for measurement.

Mr. J. E. SPILLER wished to support Mr. Sheldon Friel's remarks about the errors resulting from the Angle classification. If forward movement of the upper six-year molar took place on one side obviously it frequently did so on both, and so in a large proportion of Angle Class II. cases the lower jaw was not in post-normal occlusion. But translation of the six-year molars was one thing, the actual point of eruption of those teeth was another. Could Dr. Sim Wallace state if the first upper permanent molar ever erupted in a position anterior to the normal one ? Also, what had happened in those cases where there was obliteration of the spaces which normally should exist (or had existed) between the temporary teeth and between the second temporary molar and the permanent molars ? He would like to know Dr. Sim Wallace's views as to why, whilst translation of the first permanent molar was very common in the upper jaw, it was apparently very uncommon in the mandible.

Dr. SIM WALLACE in reply said that in opening the discussion he was labouring under the difficulty of supporting a proposition which he did not now believe to be altogether correct. As far as the relation of the first upper molar to the maxilla is concerned, this tooth does almost invariably move forward in cases of general crowding or irregularities of the teeth, and the arguments supporting this contention hold good. To make the first upper molar the key to occlusion and the relation of the jaws is therefore quite fallacious, but when the maxilla is not subnormally developed there is little or no tendency to forward translation of the molar teeth in relation to the maxilla. In a general way it may be said that it is the subnormal size of the maxilla and not the position of the first molar (in relation to the base of the skull, or, say, the foramen magnum) that is at fault. If the maxilla are normally developed the first molar is carried forward normally with the maxilla ; if the maxilla are subnormal the first molar is forced forward through or in the substance of the bone to permit of its eruption or of the second and third molars. Thus both when there is crowding and when there is not, the first molar tends to occupy a similar position *with regard to the base of the skull*, however abnormal it may be with regard to the maxilla and face generally.

The meeting then terminated.

ORDINARY MEETING.

An ordinary meeting of the Society was held at the Rooms of the Medical Society of London on Wednesday, February 14th, 1912, Mr. H. Baldwin, President, in the chair.

The minutes of the last meeting were read and confirmed.

The following gentlemen were balloted for and unanimously elected : As members : Arthur W. Johnson, L.D.S.Eng., Gordon Johnson, L.D.S.Eng., and Harold Tattersall, L.D.S.Eng. As an honorary member : Dr. E. A. Bogue, of New York.

Two Cases of Corrected Class II.*

By Mr. George Northcroft.

I have brought up two cases of corrected Class II. for criticism to-night. The first case has already been shown in its early stages, and I thought it might interest the Society to see it some three years after the case was completed. It brings out a very interesting point which we must all carefully bear in mind, namely, the necessity in these cases of establishing equilibrium. It is impossible to get satisfactory results, however good the intention may be, if proper equilibrium is not established between the pressure of the lips and the tongue and the force of occlusion which tend to move the teeth. When the boy was fifteen years old, as so often happens in these corrected cases of Class II., the lower incisors were somewhat bunched, as if the teeth were actually too large for normal occlusion with those of the maxilla. I should not like to express a definite opinion on this point, but it does seem sometimes as if the teeth in the mandible were too big for the total width of the teeth in the maxilla.

Slide 1 shows the disastrous results which occur by prematurely removing the deciduous teeth. In this case there was no oral sepsis present. The condition of post-normal occlusion had not been recognised and the case presented the appearance shown in this slide.

Slide 2 shows that the case was getting markedly worse. The first lower premolar was locked behind the first upper premolar and the upper first permanent molar was in very marked pre-normal occlusion. Not only is there post-normal occlusion but there is pre-normal occlusion as well. Therefore you have a peculiar double irregularity.

Slide 3 was taken when the boy was ten years and eleven months old. The first slide I showed was when the boy was nine and a half. In this slide you will see the occlusion has been fairly well corrected. The two pre-molars are in direct occlusion, but we have not got the upper first molar quite far enough back. I take it that tooth is still in pre-normal occlusion.

Slide 4 shows the case when I left off treating it. The teeth for all practical purposes are now in normal occlusion. The case was very

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* Slides 1—4, illustrating Case I., will be found in 1908 B.S.S.O. transactions Report.

much complicated by the upper premolars erupting in the palate and they had to be expanded out to the normal before the case could be completed. It was also complicated by the fact that even at the age of thirteen the second molars had made no attempt at eruption, showing the effect on eruption of the retarded development of the jaw. The temporary teeth having been removed at such a very early age the development of the jaws was absolutely arrested and consequently there was no room for the second premolars to come in.

Slide 5 shows the front view of the two models. You will notice the marked improvement in the overbite, which is practically cured.

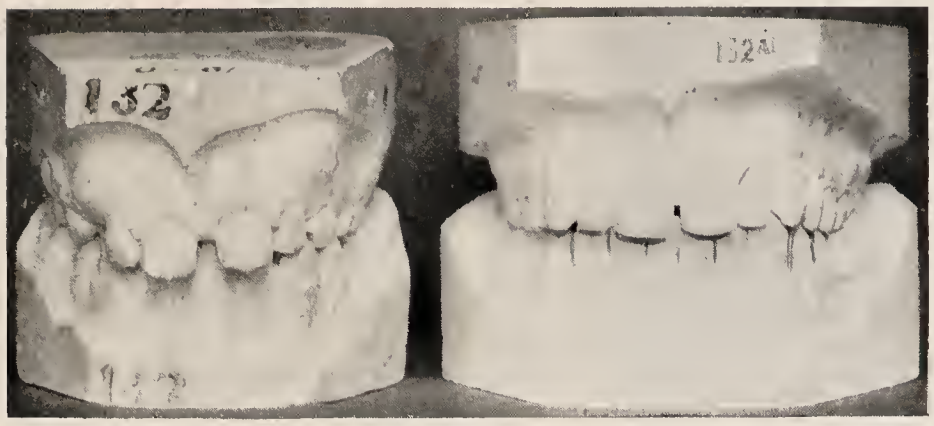
Slide 6 shows the amount of expansion which has taken place between the ages of ten years and two months and fifteen years. The width between the molars is 46 millimetres in one case and 54 in the other. The arch is practically normal, but you get the same bunching of the lower incisors which occurred in the Baker boy after treatment by intermaxillary traction, seen in the models Dr. Bogue presented to the Society. When the case was finished the incisors were quite straight and some years afterwards there was crowding.

Slide 7 simply shows the case as it is now at fifteen years of age, and the case when the boy was ten years old. I think you will agree that there is no possible chance of the case reverting. I consider it to be an absolute cure of a very bad condition. I was so doubtful about the prognosis of the case that had I not been encouraged by Mr. Harold Chapman's enthusiasm I should have hesitated before undertaking it. Before commencing treatment I sent the case to another eminent member of the profession and he saw no other way out of the difficulty except by extracting some of the teeth, but I am glad to say I did not remove any. The teeth are absolutely free from caries and there is not the slightest sign of gingivitis in the mouth.

Coming to the second case, I have brought the models with me because the photographs are not so good as they might be. This is the severest case of Class II., Division I., I have ever seen. The lower incisors bit right up into the palate and the lower canines had actually scored the gum away from the inside of the root of the upper canine, so that it looks like a bad recession of the gum. You will note in this first slide that the premolars do not occlude at all, the lower premolars being right inside the bite. This boy was reported to be too delicate to have any orthodontic work undertaken at an earlier age, and he was eighteen at the time of treatment. Having only one cusp of each of two six-year-old molars to bite upon from the age of six to twelve he must have suffered very severely. The model on the right shows the case when completed. No attempt has been made to reduce the prominent position of the upper incisors, as during treatment the boy at school received a blow in the mouth which killed the pulp of the right central incisor, and I thought it was wiser to content myself with perfecting the masticating functions of the mouth rather than attempting to perfectly restore the amount of protrusion to normal. You will see from the later photographs that all the deformity of the lips has disappeared.

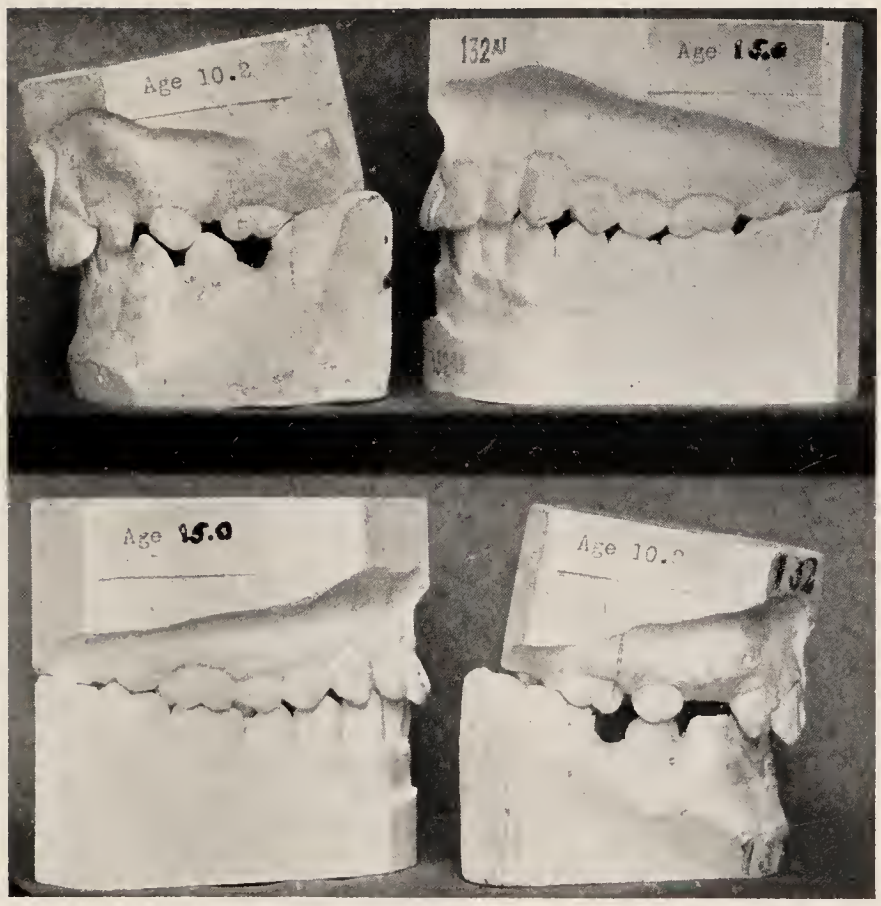
The next slide shows the occlusion, right and left. You will see what very marked protrusion there was, how markedly post-normal the lower jaw was, and how the lower teeth bit inside the upper. In the models themselves you will see that the occlusion on the left-hand side is just as perfect as it is on the right-hand side.

The next slide shows the models before and after treatment. You will see the upper jaw is very little changed. The incisors have come in a little owing to the pressure of the upper lip and the better use the



Case I.
No. 5.

Case I.
No. 6.



Case I.
No 7.

Case II.
No. 1.

Mr. George Northcroft's Communication.

Case II.

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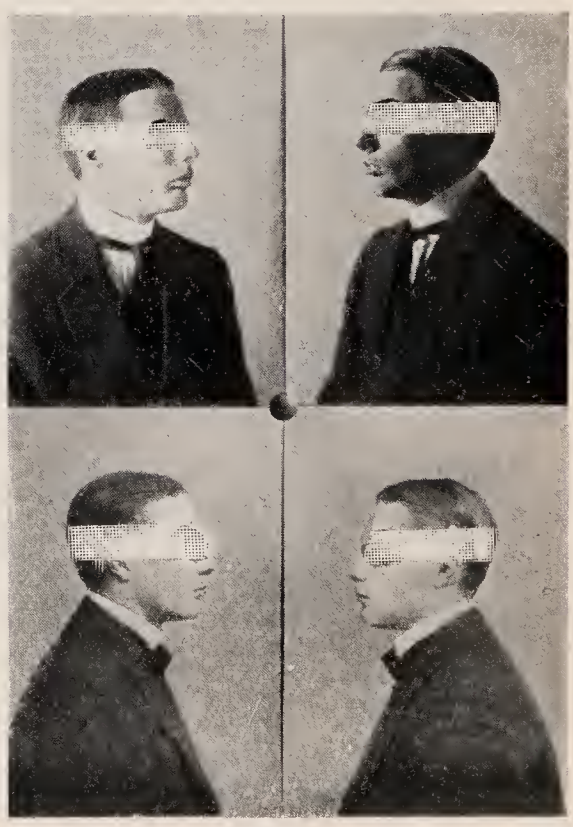

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patient can make of his jaws. There is an enormous expansion in the lower.

Next is a photograph of the lower jaw in which the amount of expansion is figured. You will see there is 2·5 millimetres in the molar, 8 millimetres in second premolars, 9 millimetres in the first premolar region, and 3 millimetres expansion in the canine region.

The next slide is the full face photograph of the patient before and after treatment, and the following slide the profiles before and after treatment. You will notice that the repulsive expression of face has entirely disappeared.

Mr. HIGHTON asked whether Mr. Northcroft would ever recommend extraction in the case of bunching of the lower incisors after the case had been completed. It seemed to him that when bunching occurred to an exaggerated degree it was either necessary to re-treat the case or resort to extraction for room to compensate for the bunching.

Mr. G. THOMSON thought the cases shown by Mr. Northcroft were very valuable and instructive. In the first case there were no wisdom teeth and he should like to know whether there was any sign of their coming up at the average age at which they ought to erupt. He should expect himself to find they were very late. He mentioned that because it suggested to him that the chief cause of the overbite was the want of growth at the proper age of the molar teeth, particularly those of the mandible. If they were not advancing there must be an overbite owing to the bite being so short. It would help very much in the treatment of such cases if it could be seen that the roots were forming.

Mr. LACEY asked whether in the second case the retention was still being worn, and if not, how long it was kept in the lower jaw. Also whether the will power of the patient was required to keep the jaw in position. He had had two similar cases, in one of which it was comparatively a simple matter to retain the bite with the retention in position for only a short period, but in the other case on account of the patient practically refusing to help the retention was necessary for a very much longer period.

Mr. MAY said he should like to know, after the distal occlusion had been corrected by the Baker anchorage, if the patient was unable to bite back, the elastics would be removed and retention put on, particularly in such cases as a patient aged eighteen or less.

Mr. MARSH had been glad to hear Mr. Northcroft raise the point about not removing the deciduous teeth because they were carious. He should like to know how far one should go in the preservation of septic, deciduous teeth for the purpose of preserving the size of the arch.

Mr. MAY said it seemed perfectly extraordinary and he was quite unable to understand why in some cases the space closed up as shown in the model, and in other cases there was no loss of space at all. In one model he had just taken, a case in which a deciduous molar was taken out eighteen years ago, there was no contraction whatever.

The PRESIDENT thought the results Mr. Northcroft had attained were exceedingly good. The first case looked almost hopeless and it was a great triumph to succeed in getting the teeth into position. He thought when the lower incisors bunched up, as they very often had a tendency to do, it was simply because the expansion had not been sufficient, particularly in the canine region, or there had been some reversion to the original contracted condition of the alveolar processes; some of the expansion became lost, and the lower incisors naturally had to get imbricated in order to stand. He quite agreed that an effort should be made to retain the temporary molars, filling them when

carious and putting them in an aseptic condition. There was no doubt that teeth which could be really called septic were bad in a child's mouth, but he always made an effort to save them and put them in an aseptic state. At the same time it was obviously not sufficiently proved that the extraction of temporary teeth always caused contraction. Sometimes there was no contraction even when all the temporary teeth had been removed, while at other times contraction was very evident. He imagined it was because in cases where contraction occurred there was some tendency to insufficient development of the jaw, and in those cases where no contraction occurred there was a strong tendency to development. It was absolutely mysterious why one set of cases should come under one category and another under another category. He thought it was a dangerous thing to remove temporary teeth before their proper time, because it was never known whether the six-year molars would come forward or not. It would be of value if Mr. Northcroft would give details of the treatment and of the apparatus he used.

Mr. SPILLER asked whether there was any very serious objection to moving a pulpless tooth provided the root and its attachments were healthy. He had frequently moved these teeth with complete success and did not think there should be any very great difficulty when the operation was carefully done. It seemed a pity Mr. Northcroft had not completed the second case by retracting the upper incisor teeth. With regard to the first case, he did not clearly understand Mr. Northcroft's views with regard to the pre-normality of the first upper molar. He remembered that Mr. Northcroft had stated on former occasions that when this tooth was pre-normal it was occupying the position in the maxilla which it would normally acquire in adult life. If this were so, why should it be necessary in a case of this description to commence treatment by the backward movement of the upper molars, seeing that they would come forward again later ?

Mr. CHAPMAN said he was particularly interested in the second case Mr. Northcroft had shown, in which the overbite had been very considerably improved. He took it that it had been facilitated in treatment by the buccal movement of the premolars, and he should like to know whether, when that movement took place, the upper and lower molars were separated from one another as regarded their occlusal surfaces, and whether they had since come down, as they seemed to be just in as good contact as the premolars themselves. He thought an excellent result had been obtained, more especially when the great age of the patient was taken into consideration.

Mr. HEDLEY VISICK, referring to the bunching of the incisors in a case in which there was apparently a relapse, asked whether it might not be due to the fact that there was a tremendous amount of expansion in the lower arch, and the tongue accommodated itself to the altered condition and consequently the inside force, which was supposed to keep the jaw in its normal arch, being partly removed, the pressure on the outside was too great. He was wondering whether, if the retainers had been kept in for a longer period, the tongue would grow to accommodate itself to the new form of arch. That might be a point to be taken into consideration in retaining abnormally extended arches.

Mr. GEORGE NORTHCROFT, in reply, said Mr. Highton had asked whether it was advisable to extract a lower incisor in similar cases. He had hesitated whether it would not be wise to do that, but he would not do so until the end of the treatment. He maintained it was a question of non-ability to establish equilibrium between the forces at work, the tongue, the lips and the occlusion. He did not think the irregularity was so marked as to make it advisable to

remove the incisor, but in other cases where he had removed a lower incisor, he had certainly seen a straighter condition. Mr. Thomson had questioned the lack of development at the back of the jaw having caused the enormous over bite. He did not know whether Mr. Thomson was speaking of cases in general or of the second case shown, but that case must have been complicated by a great many factors, the chief one in his opinion being the lack of function. The jaw had been practically functionless all the boy's life, and the curious part of it was that the boy had such an extraordinarily well-developed upper jaw. There was not very much lack of depth in the lower jaw, as could be seen by comparing the original model with the final one ; the difference was almost entirely due to the expansion of the lower jaw. In the first case there was no doubt that the boy's jaw was now growing normally, the jaw being functional and the boy using all his teeth. Very marked improvement was taking place in the growth of the boy himself and also in the development of the jaws. He thought there would be plenty of room for the wisdom teeth in about three years' time. With regard to Mr. Lacey's question about retentions, as a rule he kept on a retention until he imagined normal equilibrium had been established. That was a matter of guess work ; there was no scientific basis at all to judge how long a retention should be kept on. The error should be always on the long side. A retention was being worn in the second case in the lower jaw. Later models of the boy he hoped to be able to show in two or three years' time. This was a type of case that did not need much retention. The lower jaw had been restored to a normal condition and the cusps locked the teeth sufficiently in occlusion. He did not think there was any likelihood of the lower jaw reverting. In reply to Mr. May's question, one had to use one's judgment in gathering what caused the post-normal occlusion. In the case he had shown he thought it was the small lower jaw biting up inside the premolars, absolutely forcing the lower jaw backwards, and he argued that by expanding and bringing forward the lower jaw it would be held in normal occlusion, and that had actually occurred. The only retention used was for the expansion of the lower jaw ; no holding of the jaw antero-posteriorly was required. On the other hand, in cases of general retention, he always advised the use of intermaxillary traction of a very modified type for a considerable period. Instead of having the arches attached in D tubes, the molar hands were fastened to pinched bands on the canines by a rigid bar, and to them were attached hooks in the upper jaw, and the intermaxillary elastic was put on a hook at the back of the lower molar band, to which an inside arch was soldered, which was sometimes fastened to a band on the first premolar of the lower jaw. Probably Mr. James knew more about the removal of temporary teeth and the effects of such removal than anyone else in the Society, and he should have been glad if Mr. James had been present to give an opinion on that point. If it was necessary to remove a septic second temporary molar he held the space with a vulcanite splint and had found the system very satisfactory. The space might not close in a good many instances, but in the majority of cases he believed it did. In the particular case he had shown the malformation after the removal of the temporary teeth was undoubtedly due to the presence of post-normal occlusion. All the other children in the family had post-normal occlusion. In such cases one should be exceedingly careful about removing temporary teeth, because such removal might complicate the condition very much. He had not been able to gather any information from the parents, but he imagined that the first upper premolar in this case erupted before the lower first premolar and the teeth became locked. With regard to the lower teeth resuming their former position, referred to by the President, in the first

case shown the lower incisors were quite straight and the irregularity was an induced irregularity and not a reversion to a former position. Details of treatment would occupy too much time. Both cases were treated by intermaxillary traction with, in the first case, a careful use of the screw on the arch to bring back the first upper premolar. The first difficulty was to bring forward the first lower premolar and to get back the first upper premolar. It was done by banding the two teeth, ligaturing them to the arch and then bringing them backwards in the upper jaw and forwards in the lower jaw. At the same time expansion was going on and intermaxillary traction was bringing forward the lower jaw. He had a great disappointment in the first case in the fact that the second lower premolars would not erupt and he had to keep the space between the lower six-year-old molars and the first premolars for a very long time by the use of a vulcanite splint. Then he retained the space between the first upper premolar and the first upper molar with a vulcanite splint for some time, and then the second premolar started erupting in the palate, and he had to start expanding these teeth afterwards. The patient lived in Ireland and he did not have much chance of doing everything he wanted to do. The other case was simply treated by ordinary intermaxillary traction with excessive expansion in the lower jaw. He put in an inner arch as well as an outer one and tied the teeth to the outer arch in the lower jaw and took up the expansion by constant spring in the lower arch. Mr. Spiller regretted that he had not been bold enough to move the dead tooth. A schoolboy at the age of eighteen who had had one blow in the mouth might get another, and he did not think he was justified in loosening the teeth any more, and he did not want to risk inducing any periodontal disease. He should like much to have gone on treating the tooth, but he saw visions of absorption and all sorts of things occurring that would have been very undesirable. Also, he knew that the patient would pass out of his hands as he was leaving school and going to college. If he had drawn in the upper incisors he would have been bound to put on a retention for some time, and boys when they went to college did not care to have that sort of thing in their mouths. He thought there would be a continual quarrel about the position of the first molars. Probably the case was one of those very rare cases which proved an exception. When it was said that the position of the upper six-year-old molar was constant a reference was generally made to the mouth with a full complement of teeth. When a mouth had been mutilated all sorts of movements took place which upset preconceived theories very much. With reference to Mr. Chapman's remarks as to the occlusion of the six-year-old molars in the second case, it was foreseen that when the premolars were in normal occlusion and the molars were in normal occlusion the overbite would be raised enormously. As a matter of fact he was disappointed to find that it did not raise it still more. When he put the original models together and guessed at the amount of raising of the incisors he should get, he thought they would clear the upper incisors a good deal more than they ultimately did, and he was very much surprised at the manner in which the case finished up. He did not think the bite was opened in the molar region. With regard to Mr. Visick's remarks as to the bunching of the lower incisors and the idea that the case was not retained long enough, Herr Oppenheim had made some experiments on the jaws of animals, in which he showed there was true development of bone when teeth had been moved. But he (Mr. Northcroft) maintained that if equilibrium was not established there would be re-absorption of the bone that was formed, and therefore however long the retention was kept on it would make no difference if equilibrium was not established, there would be re-absorption of the bone and irregularity.

Mr. Shelden Friel then read his paper on

Angle's Classification.

In reading the papers dealing with orthodontics published in the different English journals, the extent to which Angle's classification is mutilated is remarkable.

Indeed some go so far as to leave out the essential points of the classification when they are quoting from his book.

Angle's classification is primarily based on the relation of the jaws to each other, not on the relation of the teeth, and it is this fact above all others that has been ignored by several writers.

The exact wording of his classification, as you know, is :—

Class I.—Arches in normal mesio-distal relation.

Class II.—Lower arch distal to normal, in its relation to the upper arch. With its *divisions* and *subdivisions.*

Class III.—Lower arch mesial to normal in its relation to the upper arch. With its *subdivision.*

Little difficulty is experienced in classifying the average case of malocclusion ; but with regard to those instances where mutilation has taken place, Angle says, quoting from his book :—" Hence in diagnosing cases of malocclusion, we must consider, first the mesio-distal relation of the jaws, and dental arches, as indicated by the relation of the lower first molars, with the upper first molars—the keys to occlusion ; and second the positions of the individual teeth, carefully noting their relations to the line of occlusion." And again, " The loss of a tooth, or teeth, by extraction is shortly followed by such marked changes in the positions of the crowns of the remaining teeth, as to sometimes render diagnosis more difficult. By the determination of the extent of the tipping of teeth due to this loss, the case is resolved into its original condition, from which it can be easily diagnosed."

Sufficient attention has not been paid to these lines, as pointed out by Dr. Grünberg at the last meeting of the Alumni Society of the Angle School of Orthodontia.

I have chosen some cases that are of particular interest from a diagnostic point of view, the proper treatment of which, on diagnosis, appears to me to be free from doubt.

The first two cases that I wish to show have had rather a chequered career as regards their classification. (Figs. 1, 2, 3 and 4.)

This boy, when he came to me in April, 1910, I classified as *Class II., Div. I., Subdiv.*, and I treated him as such till January, 1911.

At that time I was in communication with some Orthodontists in America, and for the following reasons I changed my classification to *Class I.*, mutilated. Angle's classification is based on the relation of the jaws or arches, not on the position of the individual teeth, though when the case is mutilated, the relation of the two arches is found by the occlusion of the teeth. During the eruption of the six-year molar, the deciduous arch is translated forward, but if for any cause the contact point is lost, for example by decay or loss of teeth, instead of the arches being translated forward,

the six-year molar moves forward into the position occupied by the lost deciduous teeth, as it has the same pressure forward as would have driven forward the whole arch, and thus it comes to take an abnormal position for the age of the child.

Figs. 1 and 2 (already shown).

In this case the two lower first temporary molars have been lost prematurely, and the action of the lower lip has driven back the incisors equally on either side; the same action of the lip has also driven forward the upper incisors equally on both sides.

Fig. 3 (already shown).

The distance between the upper left central incisor, and the first molar is less than the distance between the right central and the right first molar, and I think this indicates that the upper left first molar is in a mesial position for that age, rather than the lower in a distal position.

From a study of the work of Dr. Grünberg, of Berlin, I now believe too much stress was laid on the action of the lower lip on the lower incisors.

It appears much more probable that the lower molars and premolars have come forward a greater distance than the canines have gone back.

If this is so, then the case resolves itself into a full division of *Class II., Div. I.* (Fig. 4).

This also is borne out by the boy's photograph.

(Fig. 5.)

The next case came to me about the same time, and I classified it as *Class II., Div. I., subdivision.*

On the left side you see that the lower arch is in distal occlusion, which I think is not due to the loss of the lower first molar.

(Fig. 6).

On the right side I believe that the upper teeth are in a mesial relation to the lower teeth, due to the premature loss of the deciduous canine. The upper right central and lateral have also drifted towards the canine space, but only to a very small extent.

(Fig. 7).

The distance from the centre of her mouth to the right upper first molar is much less than that to the left upper molar.

(Fig. 8).

In her photograph, I think that the lower left side looks a little too far back, and that the upper right looks a little too far forward.

This method of measuring the length of either half of the arch was primitive, and the amount of knowledge gained was very limited.

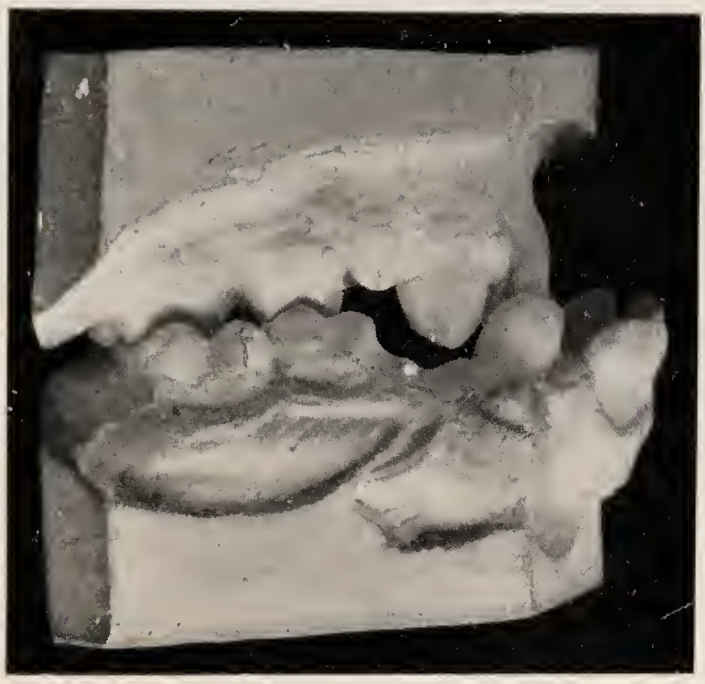
It has remained for Dr. Grünberg to bring forward his symmetroscope for the determination of the symmetry and asymmetry of the dental arch.

Too much cannot be said for the usefulness of this instrument for finding the amount and direction of movement of teeth in any case of malocclusion, especially after mutilation.

Dr. Grünberg first brought it forward at a meeting of the Austrian Stomatological Society in December, 1910 (Fig. 9).

Angle's Classification.

By Sheldon Friel, B.A., M. Dent., Sc.



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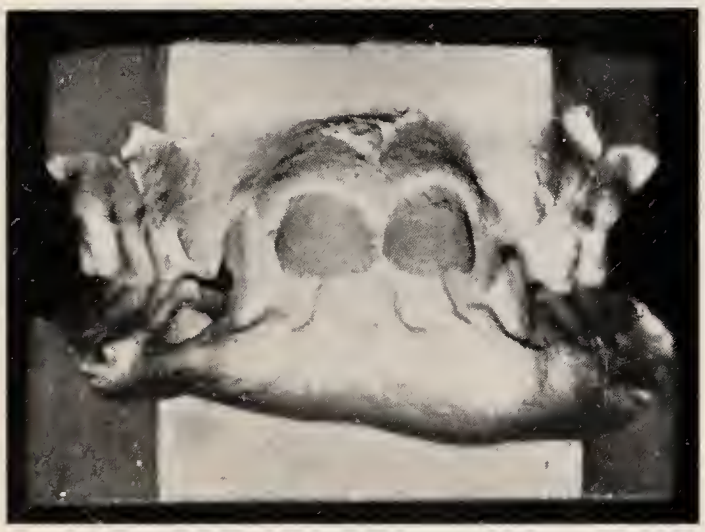

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Angle's Classification.

By Sheldon Friel, B.A., M. Dent. Sc.

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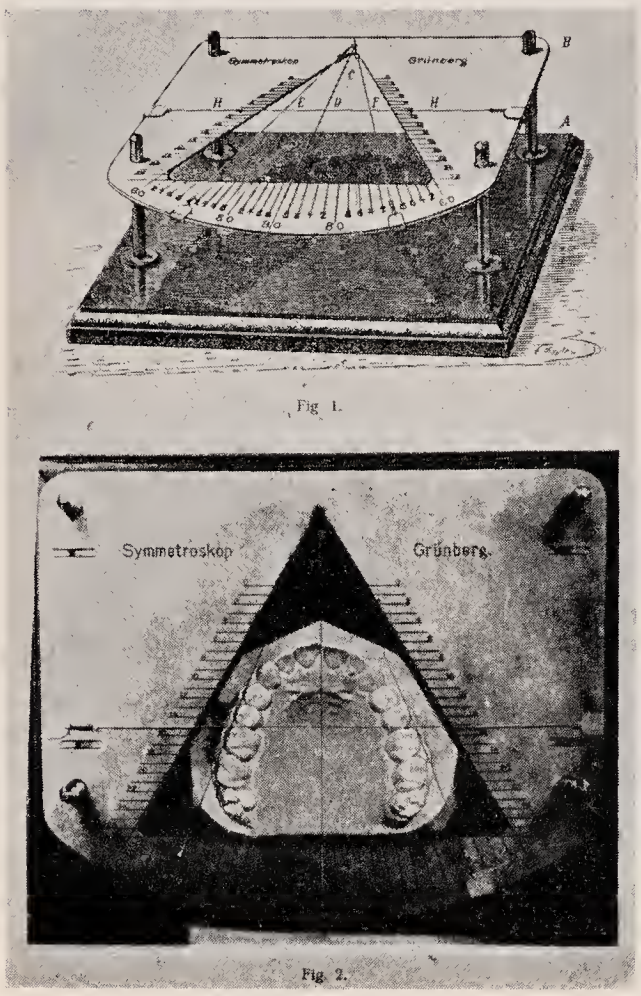

From the Oesterreichisch-Ungarische Vierteljahrsschrift für Zahnheilkunde.

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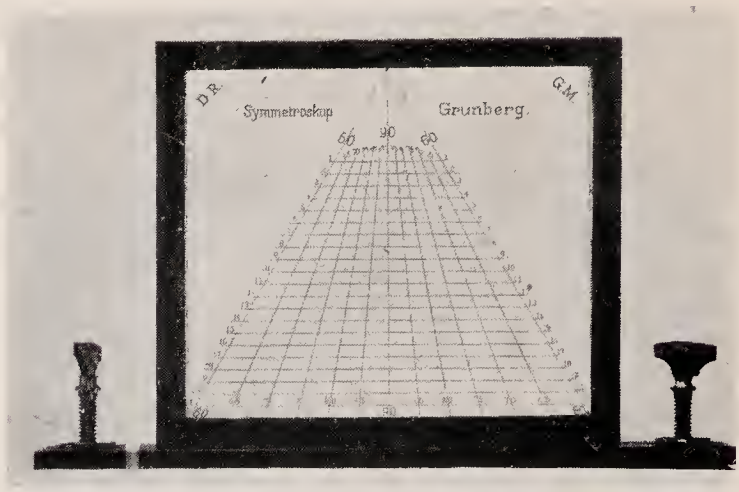

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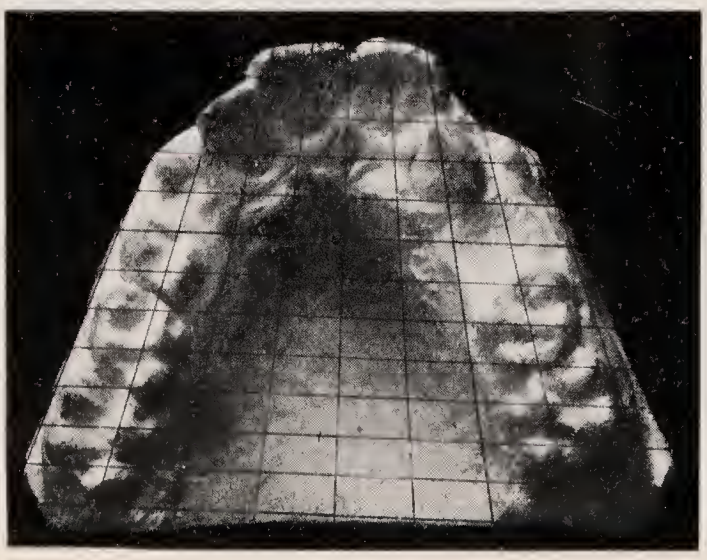

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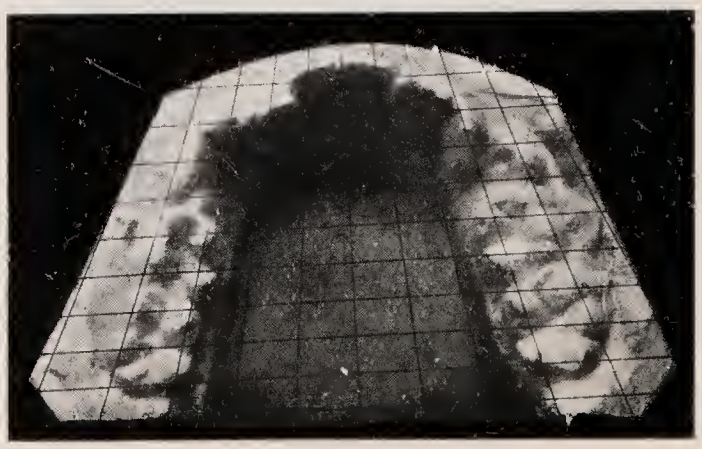

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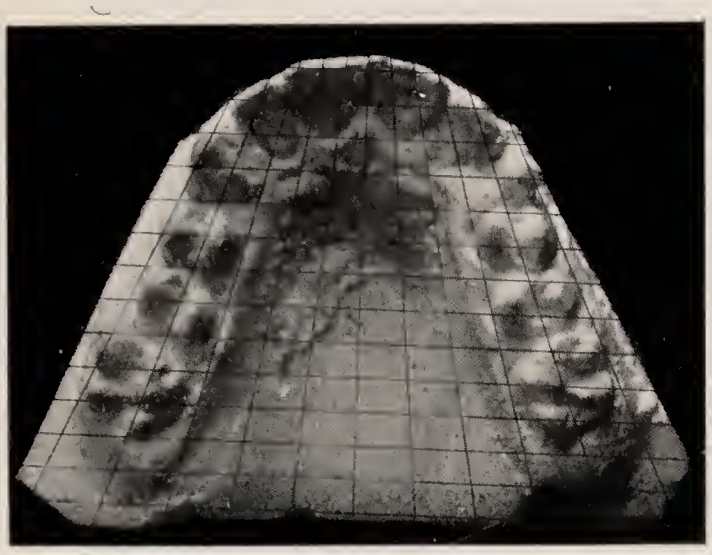
Angle's Classification.

By Sheldon Friel, B.A., M. Dent. Sc.



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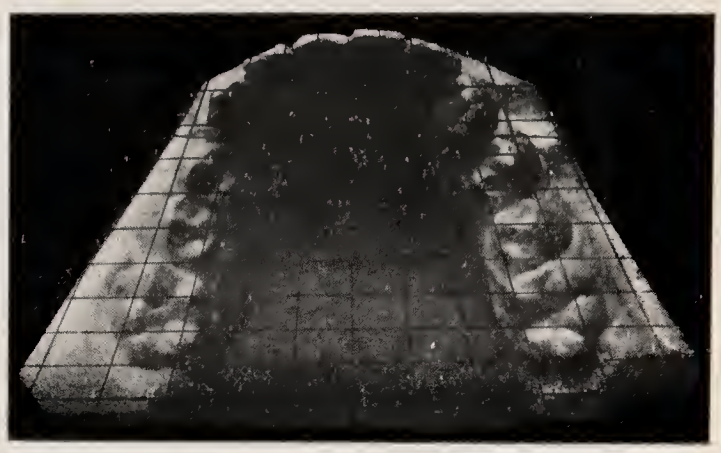

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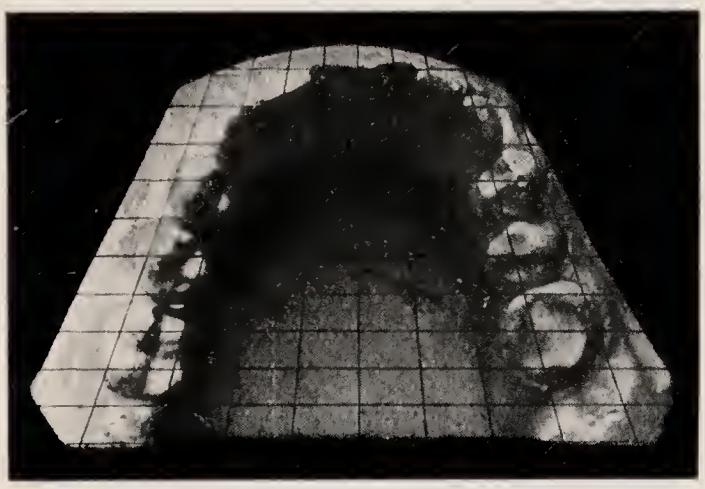

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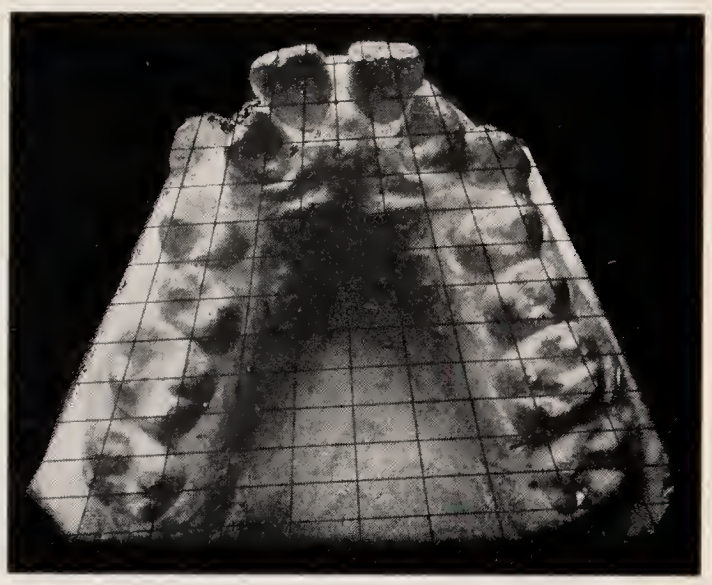

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Angle's Classification.

By Sheldon Friel, B.A., M. Dent. Sc.

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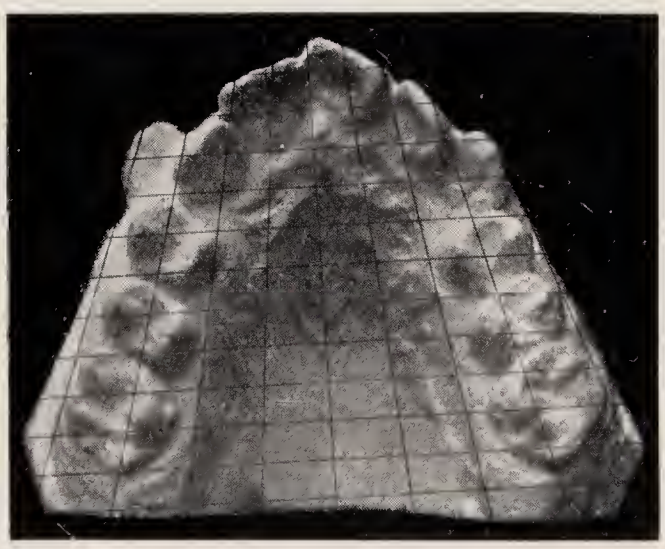

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It consists of a base with four pins, on which rests a plate, capable of being moved up and down.

A triangular space is cut out of this plate to allow for the reception of the model.

Of the three threads stretched across the plate from the top to the bottom, the centre one always remains at 90°. The two others are moved about, the angles between each of them and the centre line always being equal to each other.

The cross line is also movable.

The model is placed on the glass slab under the opening in the plate, and so situated that the 90° line passes between the central incisors, and that the two side-threads touch homologous points on homologous teeth, points being chosen that approach normality as far as possible.

The cross-thread now is moved up and down, care being taken that it corresponds with the same number on each side. Observations can now be made, as to how far any tooth is symmetrical with a similar tooth in the other half of the arch, in a mesio-distal direction.

The diagnosis of a case of malocclusion is often far more difficult than the actual treatment.

The Symmetroscope has removed some difficulties from our path, while on some points it suggests fresh problems.

It has made treatment far more exacting, as through it it is possible to find out how far the teeth have been brought into normal occlusion. It is not to be understood from this last statement that the instrument predetermines the line of occlusion (Fig. 10).

A celluloid plate with the same principle drawn on it serves to examine photographs of models, and also is used when photographing in conjunction with models. (Fig. 10).

I believe that it would take years to recognise what this instrument points out with regard to the movements of teeth, and what I will endeavour to show in the following cases is probably only half what could be seen if one thoroughly understood it.

(Figs. 1, 2, 3, 4 and 11).

In the first case I pointed out that I thought the left upper molar had come forward on account of the too early loss of the deciduous canine.

In relation to the right side, it has come forward 4 mm.

The lateral has also moved distally 4 mm. and lingually about 3 mm.

(Fig. 12).

The lower molars are "physiologically symmetrical."

The lower right canine is a little distal, in relation to the left canine. When you imagine the upper molars moved back the necessary amount, you will perceive that they have a normal relation with the lower molars. But I believe that the lower molar teeth on both sides have moved forward on account of the loss of the deciduous first molar, and that therefore it is properly placed in *Class II., Div. I.*

(Figs. 13 and 14).

In the second models of the same case you see that it is improved, but still not quite right.

(Figs. 5, 6, 7 and 8).

The second case is somewhat more complicated, and it requires a very careful study of the patient's photograph of the occlusion, and of the models under the symmetroscope, and lastly the putting together the small amount of facts that are known with regard to migration of teeth after mutilation, before a correct diagnosis could be made.

The following measurements I have noted on the patient's chart (Fig. 15).

Taking the lower arch first :—Left second prm. is distal 1·5 mm. in relation to the right second prm. First left prm. distal 1 mm. Left second molar mesial 9 mm. in relation to right second molar. (Fig. 16.)

In the upper arch, first taking the right side in its relation to the left side. The canine mesial 3 mm. First prm. mesial 1·5 mm.

Now judging from the photograph of the patient, the history of mouth breathing, the action of the lower lip on the incisors, and the occlusion, I think it is probable that the laterals have moved distally *very little*, and that the space for the canines has been closed by a forward movement of the back teeth.

The space for the right canine = 4 mm.
For the left canine = 7 mm.
Width of canine = 9 mm.

Therefore the teeth on the left side have moved forward 2 mm.

This 2 mm. can be added to the amount that the right first prm. is mesial, *i.e.*, 1·5 mm, making a total of 3·5 mm. The right lateral is more lingual than the left lateral, and restricts space for canine to a distance of from 1 mm. to 1·5 mm.

Adding now mesial position of first molar	=	3·5 mm.
The lingual position of lateral	=	1·5 mm.
The present space	=	4 mm.
Total		9 mm.

You will notice also that the right molar has moved forward 3 mm. in relation to the left.

But the left molar has already moved forward at least 2 mm., making a total on the right side = 5 mm.

If you imagine these teeth moved back, you will see that as to the right side it should be assigned to *Class I.*, and as to the left side, to *Class II.*, as molar is only mesial 2 mm., and when moved back, still would give a distal occlusion. (Fig. 6.)

The next few cases I will not go into such minute measurements. (Figs. 17, 18, 19, 20 and 21).

This case can be classified as *Class I.* The upper right first prm. has moved forward about 3 mm., and the right lateral moved distally 2·5 mm. in relation to left side. But both halves of the arch have moved forward about 3 mm.

(Fig. 22.)

The lower left molar has come forward a considerable distance. When allowance has been made for these migrations, the case resolves itself into *Class I.*

From the study of these cases where mutilation has only occurred on one side, one is able to draw conclusions as to what happens where mutilation has occurred on both sides, in both upper and lower jaws.

I have written this paper on Angle's Classification, because I knew there was a committee sitting which was to present its report on Classification at the March meeting of this Society, and also on account of the numerous suggested classifications that have appeared, which, in their main principles, are identical with Angle's.

It seems a pity that a new classification, with new terms, should be adopted in England, when there is one at present extant, which, intelligently understood, meets all the requirements of a Classification, and which is known and used all over the civilized world.

There is nothing in my paper that is original. It is Angle's Classification.

I have taken a liberty in describing Dr. Grünberg's instrument, with a little knowledge of it, and must plead as my excuse my desire for the furtherance of Orthodontics in England.

Those orthodontists who endeavour to find out how Nature's plans have been perverted, and who strive not to make a compromise, but to help nature to fulfil her normal functions, cannot fail to see its vast importance in diagnosis and treatment.

The method and use of this instrument require much study. It would be of no service in the hands of the unskilled. By that I mean those dentists who merely straighten teeth.

Mr. GEORGE NORTHCROFT suggested that the discussion on the paper should be taken with the discussion on Classification at the next meeting. It was a paper which needed some consideration before it could be intelligently discussed.

Mr. FRIEL said he would do his best to come over from Ireland for the next meeting.

Mr. NORTHCROFT said he had very much appreciated Mr. Friel's paper, and Mr. Friel had shown great enthusiasm in coming over from Ireland to read the paper.

It was agreed to print and circulate the paper before the next meeting and to take the discussion at that meeting.

The thanks of the Society having been accorded to Mr. Northcroft for his casual communications and to Mr. Friel for his paper, the Society adjourned to March 13th.

ORDINARY MEETING.

An ordinary meeting was held at the Rooms of the Medical Society, 11, Chandos Street, on Wednesday, March 13th, 1912. Mr. HARRY BALDWIN, President, in the chair.

The minutes of the last meeting were read and confirmed.

Mr. A. Alan Forty was elected a member.

The PRESIDENT announced that there were present, as visitors, Mr. Charles A. Clark, Mr. Leyton and Mr. Smith. He also intimated that owing to the disorganized train service Mr. Marsh could not be present, and it had therefore been decided to postpone the communication which he was to have given until the next meeting.

Mr. G. PATON POLLITT then brought forward as a casual communication

A Case for Diagnosis.

This case is that of a girl *æt* 10½ years. There will be noticed the absence of a large number of permanent teeth, as shown by the radiogram, and the consequent difficulty of treatment. I should be particularly glad of suggestions as to treatment. I will show models by means of the epidiascope. There is on the left a temporary lateral tooth, which is very loose (fig. 1). There are no permanent canines, or laterals, or premolars on either side of the maxilla. In the mandible, the canines are permanent ; there are no second premolars, but there are first premolars which have not come up in their proper place. There is post-normal occlusion on one side, and slightly on the other side. The jaw is fairly well developed, but there is a pinched appearance in the alveolus. I now show you the radiographs, which Mr. Clark took. There are a permanent central, temporary lateral, canine, and first molar shown on the patient's left (fig. 4). There is no sign of a permanent canine there at all. You see also the upper right side (fig. 5), showing the upper canine. You will note the condition of the root there ; there is very little of it, and no sign of anything else. I show you also the opposite one. Here is the patient's right side of the mandible (fig. 7), and there is no sign of any second premolar. The opposite side shows the first premolar (fig. 6). Mr. Clark has kindly brought his stereoscopic apparatus, and that shows better the condition of the teeth and the absence of these permanent teeth. The main points as to treatment which I want to know about are, whether I am to leave the post-normal occlusion alone, or draw forward the incisors and first premolars ; or simply retract the upper incisors, leaving the case more or less as it is. I have only 2½ months to do anything in, because the child will then be going into the wilds of Scotland, and will not be able to see a dentist, except when she is again coming up to town.

Mr. NORTHCROFT learned from Mr. Pollitt that the case was complicated by the short amount of time at his disposal for treatment. Seeing that there were only 2½ months in which to do anything, it did not seem possible to carry out any extensive tooth movement. On first seeing the models he felt disposed to put on inter-maxillary traction,

To illustrate Mr. G. Paton Pollitt's communication.

Fig. 1. Maxilla, showing temporary lateral on left side only, temporary canines, first and second temporary molars on each side, and first permanent molars.

Fig. 4. Upper left side (radiograph), showing temporary canine and lateral (roots absorbed).

Fig. 2. Mandible, showing fractured right lower permanent lateral, permanent laterals, centrals and canines, second temporary and first permanent molars.

Fig. 5. Upper right side, showing central temporary canine and first temporary molar.

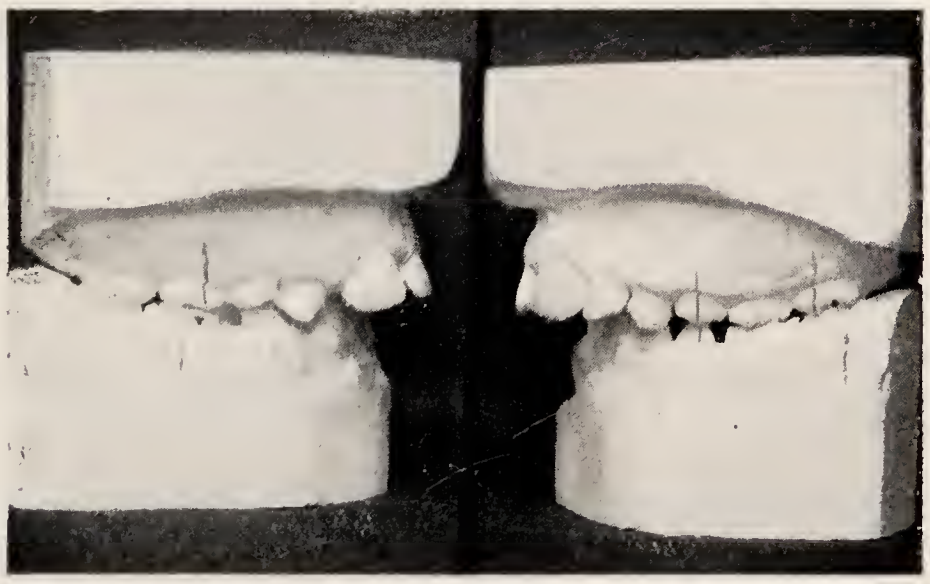

Fig. 3. Articulated Models, showing post normal occlusion on left side, and nearly so on right side.

Fig. 6. Left lower, showing impacted first premolar.

Fig. 7. Right lower, Showing impacted first premolar and broken lateral.

To illustrate Dr. SIM WALLACE'S remarks in the discussion on Angle's Classification.

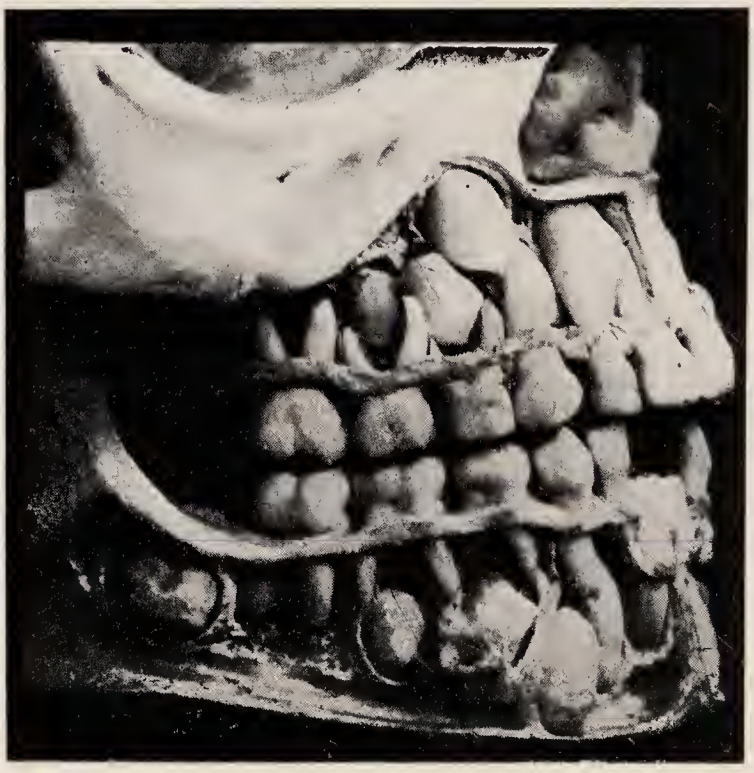

Fig. I.

Fig. II.

to bring forward the lower and bring back the upper incisors. There would then have been room for the first lower premolars, allowing the second temporary molars to remain in the jaws as long as they would ; and ultimately supply the deficiency with artificial teeth. That seemed to him to be the most advisable course to pursue. But he would seriously hesitate about such a course if he had only 2½ months in which to carry it out. Much would depend on the patient, but he deprecated rapid tooth movement as a rule. The other alternative which seemed to offer itself was to simply bring in the centrals, and retain them there for some time. But he confessed that if this were done there would be liability to relapse, and he did not think Mr. Pollitt would obtain a good result by simply retracting the central incisors.

Mr. CHARLES A. CLARK said that, from his point of view, the interesting part was the absence of the canines. He had had only one case in which a permanent canine had been entirely absent. Certainly the lower was present in this case, as the radiographs showed, and they showed also by films as well as by some other radiographs taken antero-posteriorly. Those in the stereoscope showed only the right side. The reason of the unusual condition of the canines being present was well known from studies in comparative anatomy. But he did not know whether there was any choice in the retention of the lower canines as against the upper. This child had a lower canine. One of the lower laterals, the right lateral, was broken. A point of interest about that, which Mr. Pollitt did not mention, was that when the temporary tooth was extracted that portion of the permanent tooth was broken off by doing so.

The PRESIDENT said it was difficult for members to give an opinion on a case until the models had been seen, and they had not yet reached all in the room. He had seen the models, and agreed with what Mr. Northcroft said. It seemed desirable to pull back the upper central incisors a little. As Mr. Pollitt said, they were not much in advance of their proper position, but they were a little, and intermaxillary traction would do that, and at the same time bring forward the lower incisors, without necessarily bringing forward the lower six-year molars. And in that way space would be obtained for the second permanent premolar to be erupted. Then the proper thing, he took it, was to keep all the temporary teeth and see how long they lasted. It was known that they often lasted into quite late adult life when there were no successors to them. But if they were shed, plates could be put in and the deficiency supplied. He had under care quite a small child who was wearing a small plate with a single artificial canine tooth, in order to keep a space for the permanent canine to come down. The permanent canine had not been erupted, but was present, and could be felt by palpating the gum. As the space between the lateral incisor and the first bicuspid on that side was threatening to become obliterated, he spread the space a little by means of a regulation plate, and now the patient was wearing a tiny plate with the one tooth, in the hope that the irritation due to wearing a plate would make the tooth come down, though it had not done so yet. Mr. Pollitt's case, however, was in quite a different category, as the permanent teeth were not developed at all, this fact being proved by the radiographs.

Mr. BADCOCK remarked that neither the President nor Mr. Northcroft mentioned the lower incisor, which was an additional difficulty. He would be inclined to extract that and close up the space ; he did not see what else could be done. And, in spite of the short time at the dentist's disposal, he would make all the space he could for the first lower premolars, and at the end of the time insert a small plate, with, perhaps a spring on either side, acting reciprocally against the

lower canine and temporary molars to increase the space already obtained. He understood the child could be seen again in ten months, and during that time such a plate would probably have reserved the space needed. He would also draw back the upper incisors.

Mr. NORTHCROFT asked whether the lateral tooth was dead. He did not understand it was so damaged as to destroy the pulp.

Mr. POLLITT replied that he had not examined definitely to find whether that tooth was dead or not. But the child had had no trouble from it, and it must have been broken for at least two years. The history of how it occurred seemed indefinite.

Mr. CLARK expressed the opinion that the tooth was alive, although he did not test with heat and cold.

The PRESIDENT said that if the tooth were alive it could be kept until it had formed a good long root, if it had not already, and then one could crown. If it were found to be dead, he would probe down the canal, to see how long the root was. If it were a long one and the root were fairly well formed, he would crown it. Dead or alive he would keep it and crown it. But in such a case as this, where there was post-normal occlusion and the lower teeth were receding, it was important to keep everything possible in the lower, so that each tooth would help to bolster up the rest. Probably the radiograph would show the sort of root it possessed. He would certainly keep it and crown it.

Mr. POLLITT replied that he was much indebted for the valuable suggestions offered. His inclination was to do as little as possible with the case, chiefly with regard to the difficulty of giving attention afterwards to the case. With regard to the lower lateral, he thought with Mr. Badcock that if one could improve things by extraction it would be advisable to do that, because it was difficult to crown, and there did not seem to be much gained by it, as the occlusion was wrong already.

The Report of the Committee on Orthodontic Classification.

Mr. NORTHCROFT said he desired to make some remarks which Dr. Sim Wallace, as Secretary of the Committee, should have brought forward in reference to the report. It was found very difficult to arrive at conclusions definite enough to enable the Committee, at present, to put forward a classification which would be acceptable to all. It was felt that progress had been made, however, especially in the matter of nomenclature, and also in grasping the great difference there was in considering the positions of the teeth alone, or when combined with abnormal relationships of the jaws. The Committee was of opinion that it would be wise to defer an exact classification until more ætiological light had been thrown on this very complicated subject. Mr. N. G. Bennett had compiled most of the material which aided the Committee in their work, and therefore the Committee wished Mr. Bennett to read its Report.

Mr. N. G. BENNETT remarked that Mr. Northcroft had put the matter nicely, but he wished himself to put it in another way. Mr. Northcroft had said the Committee came to the conclusion that to endeavour to decide upon any kind of comprehensive classification was a very difficult task, and felt that whatever decision it came to, the opportunities for criticism must inevitably be very great. They felt that somebody had got to stand up to be shot at. But as he proceeded to describe the classification, which he understood the Committee more or less approved of, so long as it was not held too far responsible for it, he would endeavour to involve the Committee, either as a whole or individually, as to parts of the classification. There had been printed and distributed copies of the classification, and he now proposed to talk about it.

Mr. NORMAN BENNETT then read the REPORT.

THE first of the three great classes* consists of cases due to more or less purely local causes. The first five of these are familiar to every one and need not detain us. The sixth (position of crypt) is perhaps not strictly local, inasmuch as it is developmental, but at least the effects are usually restricted to the immediate neighbourhood.

No. 7 is thumb or finger-sucking. It is divided into (a) and (b) to mark the two very distinct results that occur from thumb or finger-sucking, according to the way in which the thumb or fingers are held. We know that when the fingers are sucked more or less in a vertical position, but somewhat sloping backwards and upwards, the result is to push the upper incisors forward and the lower incisors backward. If, on the other hand, the fingers are hooked over the lower incisors, the lower incisors are dragged forwards, the upper incisors are more or less pushed upwards, and the condition of open bite results. In connection with the first variety, in which you have a pushing forward of the upper incisors, with or without a pushing backwards of the lower incisors, I have used two words which are not in the ordinary nomenclature, but they are suggested by Dr. Sim Wallace ; and I think they are very good terms to indicate that form of protrusion or retrusion in which the crowns of the teeth are moved, but in which the apices of the roots are in a normal position. The terms are pro-clination and retro-clination.

Then we come to No. 8, premature loss of deciduous or permanent teeth. These have to be divided according to the different teeth that may be lost, (1) deciduous incisors. The loss of deciduous incisors allows contraction of space in front, and produces abnormality of permanent incisors later. The loss of first deciduous molars allows the deciduous canines to be moved slightly backwards, and the second deciduous molars to be moved forwards. So when the time arrives for the first premolar to erupt, it erupts in the wrong direction. But more important is the loss of the second deciduous molar. Here we get different conditions arising as the result of forward translation of the first permanent molars ; that is to say, differences which depend on the order of eruption of the permanent teeth. We know that sometimes the second premolar is the last permanent tooth to erupt and sometimes the canine ; and according as that is the case, so the space which has been reduced by the former translation of the molars is taken up by the premolar or the canine, and when the last tooth erupts it has not sufficient space, and erupts with a buccal or lingual inclination. We have used in analogy with the words pro-clination and retro-clination the word inclination, to denote sloping of the tooth with the root in the normal position and the crown in an abnormal situation. When a slight rotation of the upper incisors already exists and the tooth that comes down last is the canine, if the space has been only slightly reduced, and the tooth succeeds in coming down into place, it may slightly increase any abnormality that already exists in the anterior region, whether upper or lower.

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* See list next page.

I.—Abnormal position of one or more teeth due to local causes :—

(1) Retained deciduous teeth.

(2) Teeth of abnormal form.

(3) Supernumeraries.

(4) Absent teeth.

(5) Abnormal frænum labii.

(6) Position of crypt, and total displacement.

(7) Thumb or finger sucking.
- Superior pro-clination.
- Inferior retro-clination.
- Open bite.

(8) Premature loss of deciduous or permanent teeth :—

Deciduous incisors.
Deciduous canines.
First deciduous molars.
Second deciduous molars, and forward translation of first permanent molars.
- Buccal or lingual inclination of canines.
- Buccal or lingual inclination of pre-molars.
- Rotation of upper incisors.
- Imbrication of lower incisors.

First permanent molars.
- Close bite and secondary superior pro-clination or secondary inferior retro-clination.
- Backward translation or retro-clination of pre-molars.
- Deviation of centre.

Other permanent teeth.

II.—Abnormal formation of a part of the whole of either arch due to developmental defects of bone.

(1) Conditions first showing themselves while deciduous molars are still in place.
- Rotation or post-placement of upper incisors.
- Imbrication or fanning of lower incisors.

(2) Conditions arising or further developing after loss of deciduous molars.
- Buccal or lingual inclination of canines.
- Buccal or lingual inclination of pre-molars.
- Accentuation of rotation of upper incisors or of imbrication of lower incisors.
- (Lingual inclination of posterior teeth.)

III.—Abnormal relationship between the upper and lower arches, and between either arch and the facial contour, and correlated abnormal formation of either arch due to developmental defects of bone.

(1) Vertical.
- Open bite.
- Close bite and secondary superior pro-clination.

(2) Antero-posterior (pre-normal or post-normal occlusion of upper or lower arch)
- (a) Normal or sub-normal.
- (b) Inferior retrusion.
  - Inferior retrognathism.
  - Secondary superior pro-clination, or retro-clination.
- (c) Superior protrusion.
  - Superior dental pre-placement or pro-clination.
  - Superior prognathism.
- (d) Inferior protrusion.
  - Inferior prognathism.
- (e) Superior retrusion.
  - Superior retrognathism.
- (f) Double protrusion.
  - Superior and inferior dental pre-placement or pro-clination.
  - Superior and inferior prognathism.
- (g) Double retrusion.
  - Superior and inferior dental post-placement or retro-clination.
  - Superior and inferior retrognathism.

(3) Lateral.
- Labial or lingual occlusion on one side or both.

With regard to the question of the loss of the first permanent molars, the loss of these before the eruption of the pre-molars leaves the child for a period to bite only with the incisors. The result of that is that the bite closes up ; that is to say, the upper teeth are pushed forwards and the lower backwards, and there is a secondary superior pro-clination, and a secondary inferior retro-clination. This condition is never recovered from in the natural manner, because later on, when the premolars erupt, they only erupt so far as the condition of closeness of bite allows ; and later on the second molars accommodate themselves to the same condition. With regard to (b), obviously this is a very familiar result of loss of the first permanent molars, a backward movement, or backward sloping or retro-clination, of the premolars. When the loss is on one side there will be a deviation of the centre—the incisors swing round to one side. The abnormal results due to loss of other teeth, permanent incisors and second premolars, we need not be concerned with ; but ill results do occur in the position of the third molars.

Now we come to the conditions in which we assume that the child is under-developed, at all events in its jaws. At the age of about seven years the normal spacing between the deciduous incisors does not occur ; I am speaking of the cases one sees frequently in which, at six years of age, or five, you may predict with absolute certainty there will be an abnormality in the position of the permanent incisors, because the jaw is not sufficiently developed to make normal room for the permanent incisors ; that is to say, we will not put it that the teeth are too large for the jaws, but the jaws are too small for the teeth. When conditions arise in that way, the most usual result is rotation of the upper incisors, because, the upper incisors being smaller in dimensions labio-lingually than mesio-distally, they can thus erupt when otherwise it would be impossible for them to do so, and so you get a rotation of the central incisors in such a way that, as a rule, the distal surfaces approach one another posteriorly ; occasionally the rotation is in the opposite direction ; you also get rotation of the lateral incisors in such a way that they overlap the central incisors, or are slightly lingually placed. The details and the varieties are comparatively unimportant ; the broad fact is, that owing to abnormal formation of part or the whole, owing to developmental defects of bone, the teeth have not room enough. With regard to the lower incisors, I have used the term imbrication suggested to me to describe overlapping ; we know that with the lower incisors the roots more nearly approach a conical form, so that individual rotation of these teeth does not enable them to erupt when they otherwise could not, and they are forced to overlap.

Later we have conditions further developing after the loss of deciduous molars, and here we are considering a part of the jaw which is farther back, that is to say, the part between the lateral incisor and the first molar. The results arising from insufficient development of bone at this time are very similar in appearance to those that arise from forward translation of the first molars. But the Committee considers—and I consider strongly—that even though those conditions appear similar in many cases, and even though, in individual cases, it may be impossible to say what the

cause was, it is necessary to distinguish between them. The real cause is fundamental, and of course the methods of treatment must depend on the knowledge—the imperfect knowledge—we possess of the fundamental causes underlying these conditions as they arise. So we have, according to the tooth that erupts last, inclination of the canines or premolars, or a rotation of the upper incisors ; I should rather say an increase of the rotation which already exists. Personally, I can hardly think that the force or power of eruption of a canine is sufficient to produce—although some authors say it does produce—a rotation of incisors that are already in a normal position. But of course in these cases, where there is defective growth of bone in the later years, there is usually some rotation of incisors, and the canines erupt into a space that is not sufficient for them, and probably cause some increase in rotation of the incisors. In other conditions you get a U-shaped arch, which consists of an inclination in a lingual direction of the premolars and molars.

Now we come to the third group, which consists of an abnormal relationship between the upper and lower arches and between either arch and the facial contour and correlated abnormal formation of either arch due to developmental defects of bone. Here we come to conditions that are classified in the Angle classification. Obviously, any abnormal relationship of the arches may be of three prime kinds ; that is to say, it may be vertical, antero-posterior, or lateral. Of vertical malocclusions clearly there can be two : open bite and close bite. Close bite, it is true, theoretically speaking, may be of two kinds, that is to say, there may be deficiency of growth in the posterior part of the jaw, or too much growth in the anterior part of the jaw. But the close bite we are mostly concerned with is that in which the development of the back of the jaw, apparently, is insufficient, and the lower incisors bite on the cingula of the upper incisors and push them forwards, that is to say, produce secondary superior pro-clination. And I want to insist here that these cases in which you get a protrusion—to use the generic term—of the incisors, frequently occur with normal occlusion ; that they are not in any way necessarily associated with post-normal occlusion of the lower arch ; that they may equally well occur, not from this antero-posterior defect, but from the vertical defect of close bite. The opposite condition to that is open bite, in which only molars occlude. We need not go into the cause in classification ; it is associated with defective development of bone, with increased obtuseness of the angle, which Mr. Rushton recently referred to in his paper.

Then we come to the great class of antero-posterior defects. I direct your attention, first of all, to the first term after each of these letters : (b) inferior retrusion ; (c) superior protrusion ; (d) inferior protrusion ; (e) superior retrusion ; (f) double protrusion ; (g) double retrusion. Inferior retrusion is, of course, post-normal occlusion of the lower arch. Superior retrusion is pre-normal occlusion of the upper arch. Taking those two conditions together for a moment, what I want to point out is, that in any particular case I do not think, as a rule, we can say this is a case of inferior retrusion purely, or a case of superior protrusion purely.

I think in most cases it is partly one and partly the other. The great majority are inferior retrusion ; but for the purposes of classification you must distinguish between the two. The fact that in practice cases share the defects of both conditions does not render the classification wrong from that point of view. The same applies to inferior protrusion and superior retrusion. There again, when the lower teeth bite one unit too far forward, or the upper bite one unit or more too far back, no doubt in most cases it is inferior protrusion that we are concerned with. But of course there are cases in which, although there is a pre-normal occlusion of the lower, or post-normal occlusion of the upper (whichever way we are regarding it for the moment), the position of the mandible as a whole is not too far advanced in relation to the face, and the real defect is in the upper arch, which is as a whole too far back. There are conditions in which the two arise ; there is double protrusion and double retrusion. The latter cases are comparatively rare unless certain teeth are missing.

To go into the sub-headings of these conditions, which attempt to discriminate to some extent, Dr. Sim Wallace thought, and I agree with him, that it is well to distinguish as far as possible between abnormalities in which the teeth are concerned, and abnormalities in which the growth of the bone is concerned. To the teeth we restrict the words pre-placement and post-placement, pro-clination and retro-clination. To the others we restrict the terms prognathism and retrognathism, terms which for a long time have been used in anthropological writings for conditions of the jaws. To refer briefly to them again, we know that in ordinary typical cases of inferior retrusion the condition is really inferior retrognathism, so at any rate it is a condition in which the development of the lower jaw is defective. It is the defect of the lower jaw as a whole that causes the teeth to bite too far back and to be in post-normal occlusion. There are two divisions of Angle's Class II., in one of which the upper teeth are directed forwards, allowing the lip to pass between ; and in the other directed backwards, the lower lip passing in front of the upper incisors to keep them back. They are very different in appearance ; but I think the fundamental point is that they both arise from the same condition, that is to say, post-normal occlusion of the lower arch. In the case of superior protrusion, it may conceivably be that the teeth are either tilted forward, or placed too far forward, or the whole upper jaw may be too far forward. We have no means of judging at present of the question whether the maxillæ can be considered in some cases to be too far forward as a whole, that is to say, the bones themselves and not merely the arch. And so in the case of the others. In ordinary cases of inferior protrusion, pre-normal occlusion of the lower arch, there is obviously an inferior prognathism. The lower jaw is not only too far forward, but as a rule it is too large. The same terms are used, and we have made them consistent by using the words prognathism and retrognathism for abnormal jaw formation, and the words pro-clination and retro-clination for tilting teeth. Speaking for a moment in connection with Angle's classification, I wish to say that I think Angle did a very great work in drawing attention to the vast importance

of the relationship between the arches. But as a classification, it seems to me that Angle's classification is incomplete and defective. In the first place, it practically takes no account of all minor defects ; it is not a classification of abnormalities of position, it is a classification of occlusion pure and simple ; and he classes together all abnormalities that occur in association with normal occlusion. I maintain that many of these abnormalities in which there is a normal occlusion, what is called "crowding" in some books—I consider it a most absurd word—arise from all sorts of causes, and if the classification is to be comprehensive it must attempt to deal with these conditions on an ætiological basis. The other defect of Angle's classification is that it takes little or no account of the relationship of the arches to the face ; it only considers them in relation to one another. And he gets over that difficulty in describing treatment by laying down the law that, except in the most extremely rare cases, the first upper molar never departs from its proper position, and that all corrections may be made with regard to that particular tooth. Therefore, to my mind, the treatment that he prescribes must, in certain of the conditions that arise, produce a double protrusion, because I think it can be hardly gainsaid that the upper arch is in some cases too far forward, and that if you correct to that tooth as a fixed point, you must produce results that are inharmonious with the unchangeable area of the face. I think that is as much as I need say, but perhaps other members of the Committee will say something. I have spoken without notes, and I have forgotten some things that I ought to have said ; but perhaps other members of the Committee will make good what I have omitted. And if there is any point I can explain I shall be pleased to do so. I hope members present will criticize as freely as they feel disposed.

Discussion.

The PRESIDENT said it was a most valuable contribution to the science of Orthodontics, and the Society was enormously indebted to the members of the committee for their labours on the subject. He first invited those to speak who had had a hand in compiling the classification.

Dr. SIM WALLACE said : In his paper Mr. Friel made some quotations from Angle which are most useful for me in opening this discussion. Thus he said, "Hence in diagnosing cases of malocclusion we must consider the mesiodistal relation of the jaws and dental arches as indicated by the relation of the lower first molars (with the upper first molar) the keys to occlusion." . . . He further quotes from Angle with regard to the fact that the loss of a tooth or teeth by extraction is shortly followed by changes in the position of the remaining teeth, which, when reckoning the occlusion, has to be allowed for. This latter admission I will not refer to, however, as it only complicates matters and my intention is simply to show that Angle's classification is always misleading, even under the most favourable circumstances. To avoid confusion I am going to treat the question from what may be called Angle's point of view, that is the relation of the jaws and dental arches as indicated by the relation of

the lower first molar with the first upper molars. It is my intention to show that the normal positions of the dental *arches* can never, or at least cannot in nine cases out of ten, be judged from the position of the first molars, for the simple reason that in nine cases out of ten the first upper molar is translated forward and slightly inwards along an arch which frequently coincides with the normal arch in the region of the incisors, but seldom or practically never in the molar region. For Angle's purpose it is convenient for him to claim that the first molar is the key to the occlusion and to try and locate it, but it is only in words that he manages to do this. Now let me quote also from Angle ; he says : " Being the first of the permanent teeth to take their positions in the arches, they exercise great control over the positions which the other teeth anterior and posterior to them shall occupy as they erupt at their respective periods and take their respective positions in the arches. As they are already developed and firmly attached in the alveolar process when the other teeth appear, the latter are built into the dental apparatus around them, as it were. They are not only the most constant in the time of taking their positions, but by far the most constant in taking their *normal* positions." I think you will all admit with me that we must refer to what is *normal* and how the teeth normally take up their correct position in the dental arch. To illustrate this point the two slides may help us : I. is the normal dentition of a seven-year old child. II. is the normal adult dentition. Now, as you know, the sum of the mesiodistal diameters of the temporary molars and the canine is about equal to the mesiodistal diameters of the two premolars and the permanent canine. Similarly the sum of the mesiodistal diameters of the temporary incisors and the spaces, which in a well-developed jaw exist between each of these teeth and between the temporary canines, is practically equal to the sum of the mesiodistal diameters of the permanent incisors. (We need not make complications by referring to the slight anterior inclination of the upper permanent molar, this is counterbalanced perhaps completely by the fact that there are frequently spaces between normally arranged incisors). Now this being so, it is obvious that normally the first upper molar takes up a position which is the sum of the mesiodistal diameters of the incisors, the canines and the premolars when measured round the regularly arranged or normal arch. Further, we must note that the front part of the maxilla and mandible is not the part of the jaw which grows. Once the front part is formed it *is* formed and the distance measured from the first molar to the alveolar point is practically constant. On the other hand, posteriorly, that is behind the second temporary molar tooth, growth takes place by deposition of bony tissue on the posterior part of the maxilla (or mandible). This deposition of bone allows of the coming into proper position of the permanent molar teeth, when the new bone deposited posteriorly has been formed in sufficient quantity. Slide II. shows the amount of bone which is developed subsequent to that which is formed to carry without crowding the front twenty teeth, *i.e.*, all the bone above and behind the second temporary normal or second bicuspid. But one of the chief characteristics associated with irregularities is the fact that the maxilla and mandible are sub-normal in their development. Leaving out of account lack of development in breadth which necessitates a position of the molars lingualwards of normal, lack of development posteriorly *necessitates* a forward translation of the first molar, and the teeth in front of it must and do either take up a crowded and irregular position or at least the canines and incisors are tilted forward. If then we have a case of crowding due to lack of space in front of the first molar, then we have proof positive that the first molar has erupted abnormally far forward or has travelled forward subsequent to eruption, in other words, Angle's Class I. may

be defined as cases in which the mesiodistal relation of the first molar is mesial to its normal position in a normal arch. Angle admits that the first molar may come rapidly forward on account of premature extraction of the second temporary molar. That a force capable of carrying the first molar is potentially present is admitted. That this force is not potentially present when the temporary teeth fall out normally is the present assumption. All that can with truth be said is that two or more teeth are moved more gradually than one. Of these we see a case when one or more teeth are crowded out of the arch; we know, unless we are prepared to deny the facts concerning the developmental anatomy of the maxilla, that the first molar has travelled forward. As regards tipping of the molars this very seldom happens when the forward translation has been very gradual, because the occlusion if nearly right to commence with remains so by the mutual relations of the opposing teeth. The last fallacy in Angle's classification, or rather the last one that I intend to refer to to-night, is his belief in " wedging " as a cause of development of the jaw. Normally there is no wedging, and the teeth come into position practically without trouble. Furthermore, when the jaws are normally developed the loss by some accident does not cause rapid displacement of neighbouring teeth ; indeed, under certain circumstances, perhaps under all circumstances, less abnormal displacement of succeeding teeth results from extracting temporary teeth and restoring health and the normal developmental stimuli for the growth of the jaws than can be gained by keeping functionless temporary teeth at the expense of the general health of the child.

Mr. RUSHTON said his labours on the committee had not been arduous, but he wished to pay a tribute to Mr. Bennett's industry. The weak point was as to how to decide, in these various cases which so much resembled each other, what was wrong and what the treatment should be. His feeling was still unchanged that in addition to considering the dental arches there should be some definite prosopometric measurement also ; the two should be taken together, so as to arrive at the most definite results. To trust to one's own judgment as to what was wrong with the face was unscientific. He would like to hear what Mr. Bennett had to say about that point.

Mr. NORTHCROFT thought that although lateral developmental defects were mentioned, on one or both sides, one might have a normal labiolingual occlusion and, at the same time, marked developmental defects of the bone of both arches. Those were the cases where there was an extremely high V-shaped vault to the palate. He used the word " vault " to distinguish it from " arch," which was the commonly accepted term for the alveolus containing the teeth. This was a distinct malformation of the jaws which had not found a place in the classification. He thought there would necessarily be too many cross-references in this classification; instead of being able to say a case belonged to class A, it really had to be relegated to two or three classes at once.

The PRESIDENT said the classification would require careful study at home, at least in the case of most of the members. It seemed to be a more scientific and certainly was a more searching classification than Angle's ; which seemed to be but crude, though it was useful to a certain extent for practical purposes. He did not propose to discuss it now, but he never liked to hear used the word " mesially " when the user merely meant " anteriorly," nor the word " distally " when the user meant " posteriorly." For instance, if the lower incisors were all in front of their proper position, it was common to speak of them being in a mesial position ; it was not a defensible term. The terms

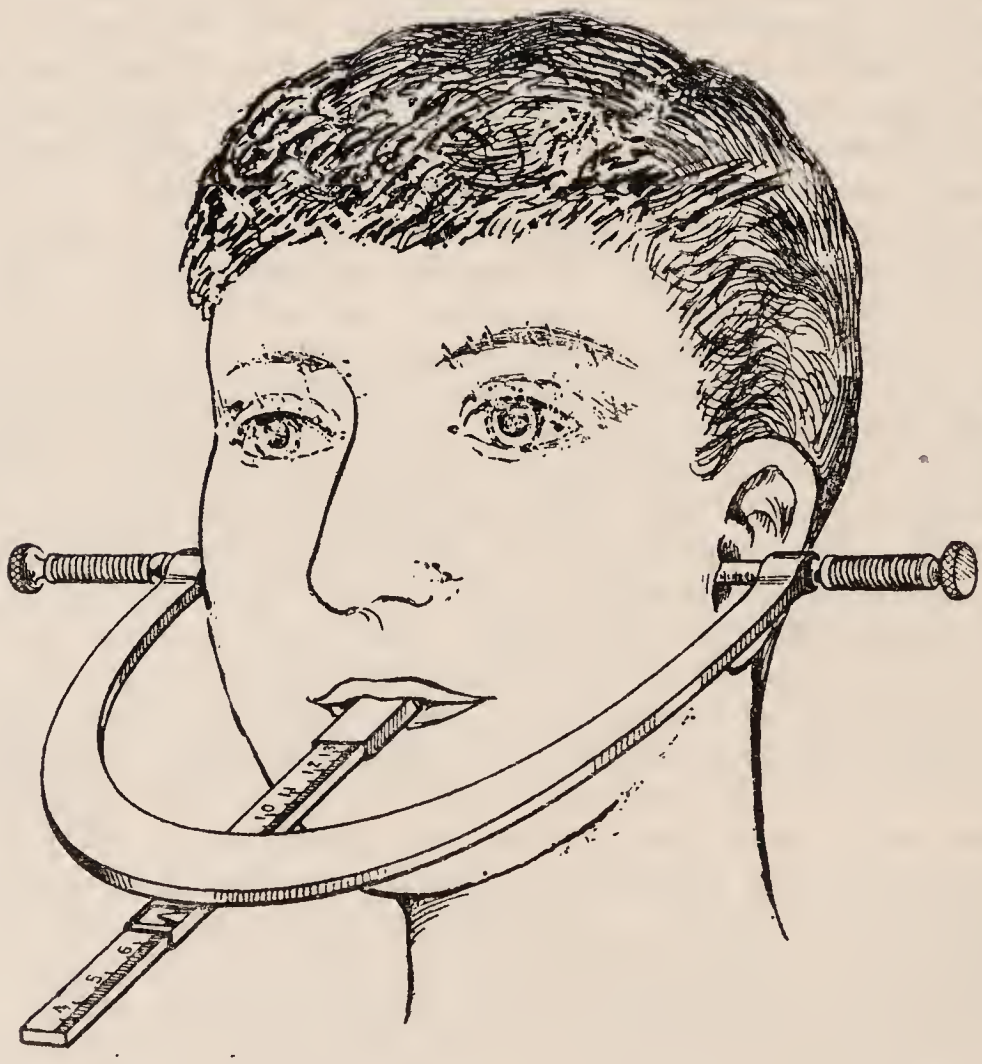
"mesial" and "distal" should be applied only to interstitial surfaces of individual teeth, and could only refer to them. He was sure the new classification would enable dentists to understand cases of irregularity of the mouth, and to search into them with clearer conceptions than had ever been possible before. Consequently members would feel immensely indebted to those on the committee for having evolved that result. He believed the committee was to continue its existence and carry on its labours. The Council had also decided that there should be another committee, for scientific investigation, which should work at the same time as the Classification Committee. The function of the new committee would be to investigate the ætiology of contracted arches, and the Council would feel indebted to any member of the Society who would volunteer to serve upon it, and thus help in the elucidation of that much-debated and somewhat abstruse subject. Names of members willing to serve should be sent to the Hon. Secretary.

Mr. N. G. Bennett, in reply, thanked those who had spoken on the classification. The criticisms had not been as searching as they might have been ; and with most of what had been said he was in agreement. He quite agreed with Mr. Rushton, and thought that ultimately the proper means of placing individual cases in their right class would be by a right system of measurement, *i.e.*, a method of measuring based upon measurements of a large number of skulls of living subjects. The method suggested by Mr. Rushton in his paper a year or so ago was very valuable. But he disagreed with him in thinking that that was in any sense a criticism of a system of classification. If in classification one provided the necessary classes into which conditions could be placed, the fact that at present means were not known for exactly allocating individual cases to their proper places, did not in itself form a criticism of the system of classification. Mr. Northcroft spoke of those cases in which there was normal occlusion, both antero-posteriorly and buccolingually, but in which there was a very high vault. That came in in the second class, *i.e.*, II. (2) (d), as there was lingual inclination of the posterior teeth in both upper and lower jaws. Mr. Northcroft referred to one very important point, and there again he did not agree that it was correctly a criticism of a classification. Mr. Northcroft said the great majority of the cases one saw did not come into the classification at all as pure types, because they could not be placed as examples of a single class. That was probably true, but it could not be helped. If a patient happened to be suffering from rheumatism and scarlet fever at the same time, it was not a necessary criticism of a classification of disease that those two diseases were distinguished from one another. He maintained that most cases of abnormality were cases in which there occurred two or three defects simultaneously. That was especially the case where there was an error of occlusion, especially antero-posteriorly, combined with other errors due to defective growth, or errors due to local causes. And it seemed to him that, at any rate for teaching purposes, the object should be to regard chiefly those more simple cases, or those of pure type, which naturally sorted themselves out into a classification that provided for all possibilities. He quite agreed with the President about the wrong use of the words "mesially" and "distally." He did not know whether he had himself just misapplied them in connection with this classification ; if he did so it was quite inadvertently. He agreed that the terms were undesirable in connection with occlusion, and that "pre-normal" and "post-normal" were much better ; and that with regard to inclination of the anterior teeth, the words anterior and posterior, or labial and lingual, should be used, "mesially" and "distally" being names merely for surfaces of teeth.

The PRESIDENT announced that Mr. Rushton's casual communication had been deferred until the next meeting, as the hour was so late. He expressed the thanks of the Society to those who had brought forward casual communications, and particularly the members of the Committee who had brought forward that important Report on Classification, also the members who had taken part in the discussions. The next meeting would be held on May 8th, and would be a Demonstration meeting. He asked members to contribute towards the success of the meeting.

The Prosopometer.

The members inspected an improved Prosopometer, an instrument for measuring the distance from the external auditory meatus to various points on the face and teeth. By this means a conception of the process of growth may be obtained, and perhaps an accessory factor in the diagnosis of malocclusion may be gained.



THE MEASURE IS IN ½ CENTIMETRES TO MAKE READING TRUE FOR BOTH SIDES

RUBBER ENDS. TO FIT IN EXTERNAL AUDITORY MEATUS

D

SPRING TO HOLD ENDS FIRMLY IN AUDITORY MEATUS.

ADJUSTABLE PIECE, WORKING IN TUBE OF MAIN PIECE TO MEASURE WIDTH AT EXT AUD. MEATUS

THE POINTER ITSELF IS ADJUSTABLE IN ITS CARRIER

B

THE FACE-BOW OF THE PROSOPOMETER

D M C.L.D

CARRIER AND POINTER WHICH IS SLIPPED ON TO SLIDE WHEN IT IS DESIRED TO MEASURE DISTANCE OF 1ST MOLAR FROM EXT. AUD. MEATUS THE LINGUAL SULCUS AT CERVIX BEING THE POINT SELECTED ON MOLAR, THE SLIDE OF COURSE PASSING INTO THE MOUTH.

E

WINDOW AT WHICH TO READ OFF MEASUREMENTS, E. GIVING THE EXACT POINT

SLIDE IS MARKED OFF IN CENTIMETRES.

H. ADJUSTABLE SLIDE TO MEASURE THE DISTANCE AS MENTIONED ON OTHER ILLUSTRATION.

READ MEASUREMENT AT POINT E.

H

GRADUATED SLIDE FROM WHICH MEASUREMENT IS READ OFF AT E.

1 NASION

D

EXT. AUD. MEATUS.

B

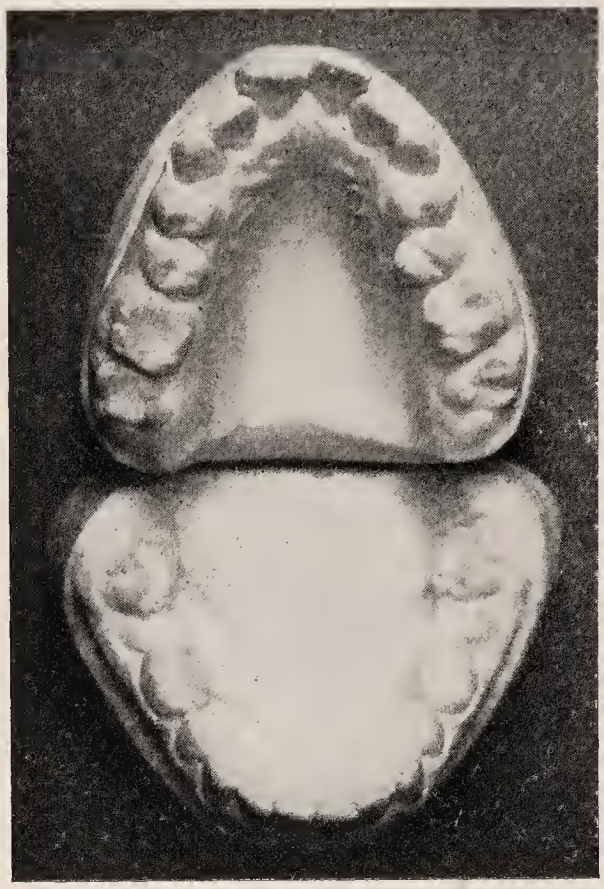
2 UPPER ALVEOLAR

3 LOWER ALVEOLAR

B

4 MENTAL

To illustrate Mr. Rushton's Casual.



1

Showing the Symmetrical abnormality in the mandibular dentition.

2.

Shows the occlusion.

ORDINARY MEETING.

An ordinary meeting was held in the Rooms of the Medical Society of London, Chandos Street, W., on Wednesday, May 8th, at 8 p.m. The President, Mr. Harry Baldwin, in the chair.

The following gentlemen were present as visitors: Messrs. R. P. Fenn and E. Balding.

Mr. George James Cundy was elected a member.

Mr. W. J. May showed a case of

Unilateral Distal Occlusion

treated by Angle's method. He used reciprocal traction with the Baker anchorage for six months, taking twenty visits, no retention being needed. He also showed a case seen eight times and treated by an appliance-plate and gold spring wires pulling back the upper front teeth, in six visits. The lower bicuspids erupted later.

The President was of opinion that Dr. Baker was the originator of reciprocal traction, as well as of the anchorage which bears his name.

Mr. G. Northcroft wished to enquire what occurred when the lower premolars erupted; did not all the front teeth go forward?

Mr. May said the lower bicuspids had forced their way in.

The President wished a model had been taken of the lower jaw, as some say that no force is shown in eruption, and this case shows force.

Mr. Paton Pollitt enquired what happened to the other side.

The President said it appeared to him that, in the first case, the six-year molars had gone back. Mr. May brought the lower canine forward by attaching it to the wire arch and then drawing the bicuspids on with rubber bands.

Mr. Wm. Rushton gave a casual communication entitled

Congenital Symmetrical Abnormality in Eruption,

and exhibited models and slides. He said:

The slides I am about to show are from the mouth of a patient of Mr. H. W. Dewes. The dentition of the maxilla is normal, but that of the mandible presents an interesting abnormality.

The patient is a girl of nineteen years, whom Mr. Dewes has known since early childhood, and he is certain that the two lower first molars have never erupted. The lower first premolars have erupted at age thirteen, normally, but the second temporary molars are persistent and show no signs of looseness. The second permanent molars erupted at age sixteen, and quite recently the second premolars have erupted between the second temporary molars and the second permanent molars, and their further eruption is prevented by their partial impaction between those teeth. The points to be noted are that the

abnormality is rare, if not unique, the condition is symmetrical, and the patient is, generally speaking, backward for her age. So far it has not been possible to obtain a radiograph.

I showed the models to Mr. J. F. Colyer, who writes : " The models are most interesting. I do not remember ever having seen a case like it before. Are you quite sure that the first permanent molars were not removed at an early age ? Of course the whole value of the case turns upon that. I think there is some reason for the premolar slipping behind the deciduous molar on the lines that it is due to a kind of atavism. I think you will find that in many of the anthropoid apes, and certainly in some of the baboons, the premolars develop well below the lateral roots of the deciduous teeth, and in two or three skulls I have noticed they have had a distinct inclination backwards. It is quite easy to see that, with the first permanent molar away, there would be a tendency for the premolar to move backward."

There is another point which strikes me in conclusion. The second permanent molar is budded off from the first in development ; if the first is congenitally absent, where does the second come from ?

Mr. Badcock asked for a skiagram to add to the value of the case.

Mr. Thomson asked if models of any other members of the family were available.

Mr. Rushton knew of no dental anomalies ; but there were other persons in the family who were abnormal in other respects.

Mr. Preedy wished to know how to decide whether to extract retained temporary teeth, as often the teeth, which looked well in a skiagram, loosened (temporary canines for example) and left the patient in a bad way at the age of twenty-five or so.

The President said the interest of the case depended on whether the six-year molars had really *not* been extracted.

Mr. Rushton said he had been assured by Mr. Dewes that the six-year molars had certainly not been extracted.

The President, in reply to Mr. Preedy, stated that if temporary teeth were tight he kept them in the arch.

Mr. E. Balding exhibited models of a case showing a modification or extension of the Coffin-plate principle, enlarging the arches both in the antero-posterior and lateral directions. The plate was an ordinary split plate, and was so fashioned that the bicuspids and molars, on one side only, were pushed back by a spring to make room for the canine to erupt.

Mr. J. H. Badcock preferred the screw as the instrument for expansion, as he could get an amount of expansion of six full turns of the screw in six weeks ; and he found a firm plate best, as the steel springs entailed the capping of the teeth to hold the plates in place.

Mr. Rushton also preferred screws and Jackson's cribs or bands where teeth had been extracted, as plates capping the molars frequently broke and were sent back by post to be repaired and then did not fit.

Mr. Balding doubted Mr. Badcock's screw being of any use in expanding in an antero-posterior direction only, though doubtless it was good for lateral expansion. He had been able to fix the spring plates securely in all cases, and the capping of the teeth had not upset the occlusion. He considered removable plates and the use of an antacid effective, as he found them less liable to cause caries than fixed screw-bands.

Mr. Northcroft protested against raising the bite for inter-locked teeth.

In reply to a question, Mr. BALDING said he had no experience of cementing plates in position.

Mr. LOUIS JEFFERY showed a double picture-frame in which an arrangement allowed him to reverse the picture to show a number of photographs of cases before and after treatment.

Mr. LOCKETT exhibited slides of an uncompleted case and asked for suggestions as to treatment.

Mr. MAXWELL STEPHENS said that he had seen three cases in which the temporary molar had moved forward and formed a very awkward place to cleanse.

Mr. MAXWELL STEPHENS produced models of a case in which wires on a plate pressing on the front teeth were brought round the last molars. When the bite was very close he used a piece of cast gold, from which the wires sprang. This made a very strong job and the wires did not press into the tissues.

The PRESIDENT mentioned the use of the nitrous oxide blowpipe to solder new springs to any gold attached to a vulcanite plate.

Mr. WILTON THEW showed "Tinol" for soft soldering, *i.e.*, finely-powdered soft solder, mixed into a putty-like mass with a flux. No free acid was present and it was useful in adding spurs or hooks to an arch.

The LIBRARIAN acknowledged the receipt of books—*Lehrbuch der Orthodontie*, by Pfaff, from Dr. Sim Wallace, and some German journals from Mr. Badcock.

The PRESIDENT thanked those who had brought forward communications and joined in the discussion and announced that the next meeting would be held on October 9th.

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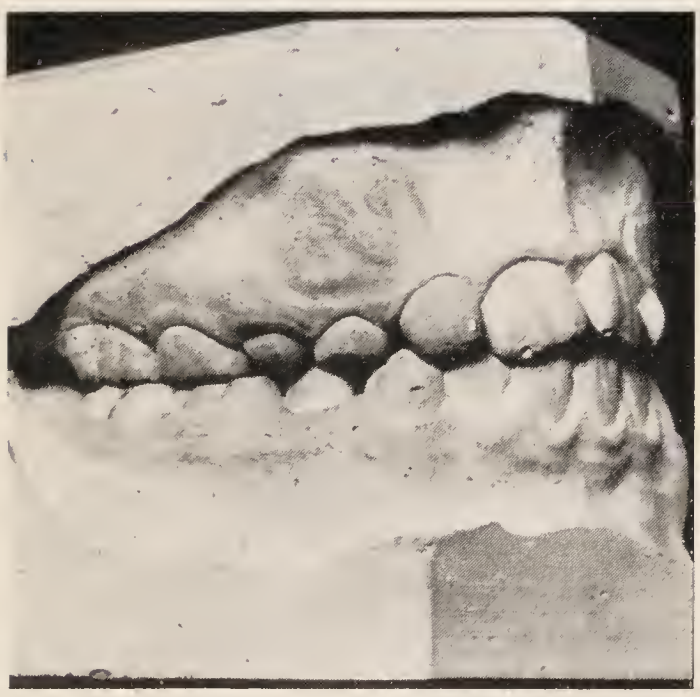
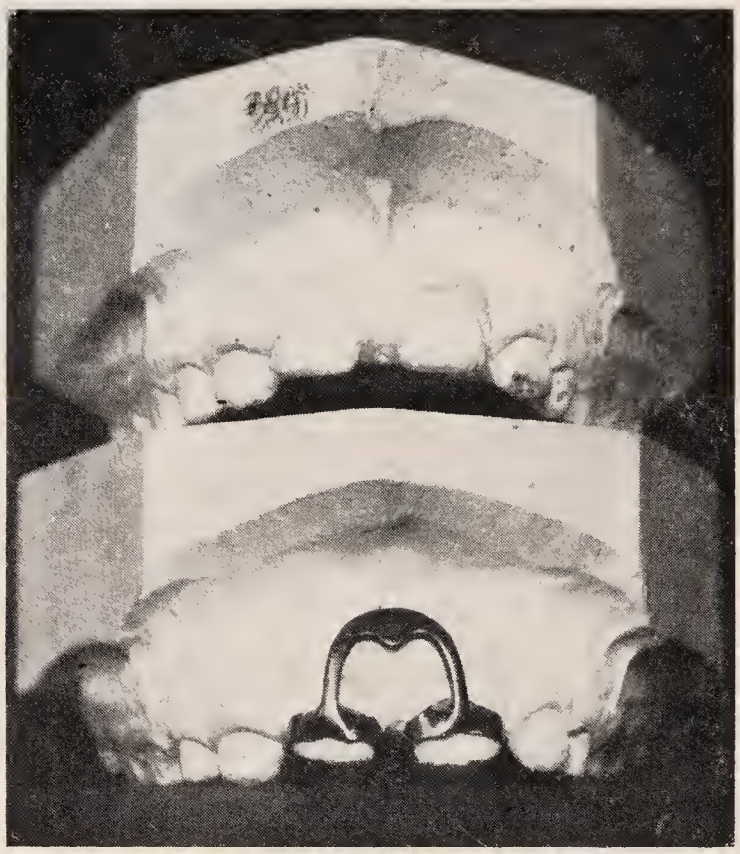
To Illustrate Mr. H. C. Highton's Communication.



To Illustrate Mr. George Northcroft's Communication.



ORDINARY MEETING.

An ordinary meeting of the Society was held at the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, W., on Wednesday, October 9th, 1912, Mr. WILLIAM RUSHTON, past president, occupying the chair.

The CHAIRMAN said that the reason he occupied the chair that evening was owing to the death of their president's partner, Mr. Betts, who had passed away very suddenly. He referred to the loss the profession had sustained in the death of Mr. Betts, and moved that a vote of condolence should be sent to the widow and family.

This was carried by the members reverently standing.

The minutes of the last meeting were read and confirmed.

Mr. George W. Badcock, L.D.S.Eng., Hove, was elected a member of the Society.

CASUAL COMMUNICATIONS.

An Impacted Canine.

By Mr. H. C. Highton.

The communication which I wish to bring forward is a case of an impacted canine. The patient is a boy aged thirteen years, and a brother to the patient whose case I showed to the Society about twelve months ago. A sister has never had any permanent lateral incisors and another brother also shows the same condition, which facts I thought might be interesting in connection with this case. Owing to the tardy eruption of the canines a radiogram was taken to find out their position and as they appeared to be showing above the lateral roots the case has since been allowed to relapse somewhat, having previously been expanded with arches and bands. The models show the present condition. The radiogram shows the same case at a later period. The unerupted canine is plainly to be seen abutting on the permanent lateral root, and it appears to me to be a question as to whether the lateral should be extracted immediately or the canine allowed to be given the opportunity of erupting normally. The objection to the latter method of treatment appears to be the deflection of the position of the canine, and also the subsequent difficulty of obtaining an æsthetic result owing to the width of space between the central and first premolar.

The CHAIRMAN said it was very difficult sometimes to decide what should be done in such cases, but he should like to know whether Mr. Highton had considered the advisability of extracting the first bicuspid and allowing the canine to drop into its place.

Mr. HIGHTON said that in the case of a sister of the patient he extracted the first bicuspid in the hope that that would take place, but unfortunately the canine still continued to force its way forward above the lateral and the lateral had to be taken out, and that could be done with the fingers, as it simply rested on the gum owing to the roots having absorbed. He was rather doubtful as to the feasibility of doing what the Chairman had suggested.

Mr. MAXWELL STEPHENS asked whether it was possible to move the canine at all by injecting novocain, if it was too high up.

Mr. HIGHTON was afraid it was too high in the arch at present ; it also appeared to be coming in lingual relation to the lateral.

Mr. J. H. Badcock suggested the extraction of the temporary canines and then waiting to see what happened.

Mr. George Northcroft felt inclined to extract the temporary molar as well, so as to hasten the eruption of the first premolar, the anterior surface of which was pressing against the distal surface of the canine. If the first premolar was coming down quickly the canine might go backwards into the greater space caused by the narrowness of the root of the premolar.

Mr. Spiller asked whether the tooth was erupting on the buccal side or the palatal side, as in the model it appeared to be on the buccal side.

Mr. Highton said according to the radiogram it appeared to be erupting on the palatal side.

Mr. Spiller ventured to suggest that it was really erupting on the buccal side and the model seemed to confirm that view.

Mr. Badcock thought unless the radiogram was taken stereoscopically it was absolutely impossible to tell.

Mr. Highton thought the model probably was more correct.

Mr. J. G. Turner said it appeared to him there were two things that required to be done: one was to obtain a stereoscopic picture, and the other to see that the child's throat was clear of adenoids.

Mr. Highton said the child was in normal health. He had had his adenoids removed by a specialist a few years ago and his tonsils had also been treated. He thought he would adopt the treatment which Mr. Northcroft had outlined and would be glad to bring the result before the Society later.

An Operation on the Frænum Labii.

By Mr. G. Northcroft.

The communication that I was asked to bring to your notice to-night will not occupy the valuable time of this Society long. It has been recognised for some time that if a marked diastema exist between the upper central incisors, it is due to, or accentuated by, the low attachment of the frænum, and that successful closing and retention of this closed space is impossible while the tension from the upper lip continues. That is to say, in spite of the absorption of the thickened bony process between the teeth by ligation or other means, the gum tissue will act as a springy wedge unless released from the pull of the upper lip, and the case will relapse. A short time ago Mr. Coleman explained the method he adopted, which involved ligating the vessels. The method of procedure is as follows :—

Two pinched bands of iridio-platinum are made to fit both centrals and a horse shoe shaped piece of silver plate, No. 7, at least one-eighth of an inch broad at the top of the band, is adapted to the model so as to reach to the top of the proposed incision. The gum is anæsthetized with novocain on either side of the frænum, and while tension is made on the upper lip, a transverse incision is made down to the bone, between and at the back of the incisors ; the frænum is then dissected away by vertical cuts on each side and when the desired point has been reached the resulting loose string of tissue is cut away. The bands are now slipped on the incisors and the horse shoe waxed into place ; the whole is thus removed, soldered and finally cemented into place. It will be found on removal in a week's time that the tissue has healed perfectly without the slightest danger of fresh adhesion. The whole apparatus keeps beautifully clean. The only precaution one must take is to keep the silver arch from pressing on the gum ; at the same time it must be fitted up at the top closely enough to prevent the lip from creeping

underneath. In the first case in which this method was tried the arch was simply ligated to the bands so that the teeth could be drawn together at the same time. This did not prove as satisfactory as the soldered method afterwards adopted. The same principle has been used successfully after severing adhesions between the cheek and gum following ulcerative stomatitis, by soldering a heavy piece of plate to a screw band on the molar.

(Mr. Northcroft showed models and illustrated his method by a drawing).

The CHAIRMAN said he had not quite understood Mr. Northcroft's method until he saw the diagram. It now appeared to be a simple and ingenious operation. He would like to ask whether such an operation caused the considerable hæmorrhage that one sometimes read of in connection with dividing the frænum.

Mr. BADCOCK said he had been told by Mr. Northcroft that there was no hæmorrhage to speak of. According to Mr. Northcroft, his operation was rather simpler than that of Mr. Coleman, though he himself thought Mr. Coleman's operation was possibly the simpler of the two. Mr. Coleman's operation certainly only occupied a very short time and no tissue was removed in between the centrals. Mr. Coleman's view was that when the frænum was cut and the two parts prevented from joining, the piece of tissue between the centrals would atrophy. Whether that was so or not he did not know, but he had gone on the principle of hoping that it would be so.

Mr. MELLERSH asked whether the hæmorrhage was not affected by the use of novocain and adrenalin.

Mr. MAXWELL STEPHENS asked whether Mr. Northcroft found it necessary to remove any of the alveolus beyond the little gully he had described, either by cautery or in some other way.

Mr. J. G. TURNER asked how long the teeth were kept together before the original retention was abandoned.

Mr. NORTHCROFT, in reply, said he used novocain and a certain percentage of adrenalin and that might account for the remarkably slight amount of hæmorrhage. He did not think it necessary to remove any bone from between the teeth, because he thought that tooth movement caused absorption of the bone, and he reckoned to get absorption of the alveolus from tying the teeth together. With regard to the time of ligating, roughly the teeth were tied together for three months, but he could not say exactly without looking at his notes. He thought he had left the retention on amply long enough after the teeth were together, but the case relapsed ; it had not, however, relapsed since he performed the operation, a period of some two years or more ago. As a side issue Mr. Badcock had reminded him that the late Professor Skeat was a great advocate of simple language, and that instead of using the word " ligated " the simple English word " tied " should be adopted.

The remainder of the evening was devoted to a discussion on

A Collection of Orthodontical Dicta.

By Dr. BOGUE.

1st. The regulation of the temporary teeth is the most important feature in modern orthodontics.

2nd. The prevention of dental deformities requires the retention of the deciduous teeth in their proper positions, and proper relations to each other until the permanent teeth are ready to erupt.

3rd. Adenoids are a cause of dental, nasal, facial and thoracic deformities.

4th. Hyperthropied adenoids may be discovered at a very early age through the presence of snuffles, ear trouble, paroxysmal cough or mouth breathing. The adenoid may generally be easily removed during the first year of life without an anæsthetic, and almost without hæmorrhage or pain.

5th. The early discovery and removal of adenoids and thorough performance of the functions of mastication and breathing are the surest preventives of irregularity among the temporary teeth. We find an intimate relation between irregular temporary teeth and the whole category of children's diseases.

6th. Irregularities among temporary teeth are about as frequent as among permanent teeth.

7th. The surest preventive of dental deformities, as well as of contagious diseases, which are acquired through mouth breathing, is to spread the arches of temporary teeth, when too narrow, and to correct mal-positions.

8th. Under-developed dental arches are evidences of lack of vigour. Nature, unaided, cannot spread them. Almost all irregularities mean an arrest in development. Protrusion of the front teeth indicates a narrowed arch, which is another symptom of arrest in development.

9th. Spreading the arches of temporary teeth enlarges the nasal passages and allows the mouth to close, thus preventing the entrance directly into the lung of the air-borne microbes of contagious diseases and forcing them to pass through the filter of the nose.

10th. The relation existing between the temporary incisors and the permanent ones can, by measuring the width of the upper temporary incisors, be ascertained with sufficient accuracy to furnish a working basis for the calculation of the size of the permanent arches.

11th. A standard relation between the width of the upper central incisors and the proper width of the dental arches has been demonstrated, so that one may be calculated from the other.

12th. Correcting dental deformities before the sixth year not only assures correct arches of permanent teeth, but aids in the correction of nasal stenosis, due to deflections of the septum, and aids in the correction of curvatures of the spine, which carry with them the ribs, an irregular breastbone, and stooping shoulders.

13th. The child's brain at six years of age is within 40 grammes of its weight at nineteen years of age ; hence it is most important that all irregularities of nose, face or teeth should be corrected before the sixth year, while growth is at its maximum.

14th. Perfectly close and regular teeth at five years of age constitute a marked deformity, and are an absolutely sure indication of a crowded condition in the permanent teeth beneath.

15th. The normal arch of temporary teeth at five and a-half years of age, its front teeth being spread apart normally, should correspond in size to the arch of the ten front teeth of the permanent set at the date of their eruption.

16th. The conditions which most call for the attention of the orthodontists at this early age (four to six years) are two, prognathism of the lower arch and the continuance too close together of the temporary teeth, especially the six front ones up to this age. At four years of age these arches can generally be spread in from fifteen to ninety days, at small expenditure of time or money, and without pain if the child has been well brought up and has not been frightened. At five years of age it will take months to accomplish the same result, and at six years of age one can never be sure of results under two years, although the actual movement may have been made in two months.

Discussion

The Chairman said Dr. Bogue had read a paper on the subject at the annual meeting of the B.D.A. in London in 1911, and it might be well briefly to touch upon some of the points put forward in Dr. Bogue's paper. Dr. Bogue started off with a definition of what deformity was, and suggested the following definition of the normal positions of the temporary teeth : "The teeth are in regular alignment when their greatest diameters combine to form an arch of the recognised type." He went on to say : "We might elaborate this by saying that when a tooth stands inside or outside the arch, or is so rotated that its contact points are not in perfect alignment with the contact points of the adjoining teeth, the greatest diameters cannot combine to form the arch." Then Dr. Bogue continued : "Of the several causes of deformities of the dental arches none is so important as what are generally called adenoids. . . . If the adenoid does *not* become enlarged, it probably plays little part in interfering with respiration, but when enlarged it becomes of great importance to the child, the dentist, and the rhinologist. It is now the practice of prominent child specialists to remove the hypertrophied adenoid when the child is less than a year old. At this time no anæsthetic is required, the pain and hæmorrhage are generally very slight, and the child is usually feeding or asleep in a very few minutes. Such early removal is of great value to the child's health." Then Dr. Bogue showed how the influence of the adenoid caused the deformity, taking what was now considered the orthodox view, that the balance of the tongue on the inside of the mouth and of the facial muscles on the external side was interfered with, and consequently the jaws were pinched up and the teeth prominent. Then he continued : "Permit me to call your attention to a condition which invariably precedes the oncoming of dental deformity. Even if it be not classed as one of the causes of such deformity, it must be regarded as a diagnostic symptom. I refer to the failure of the arches of the temporary teeth to spread enough to permit the orderly eruption of the permanent teeth, especially in the incisor region. The temporary incisors are not as wide mesio-distally as the permanent incisors which are to take their places. It is proper, therefore, that before the permanent incisors erupt, the arch shall begin to spread in the incisor region until the temporary incisors are noticeably separated. This separation goes on until the width of the temporary incisors, with the the width of the newly formed spaces between and beside them, equals width of the four permanent incisors which are to erupt there. If this spreading of the arch has not occurred at the age of five and a half years, irregularity of the permanent teeth is unavoidable. It is the writer's belief that deformities of the adult dental arches may be prevented by proper treatment of the deciduous arches." Probably five and a half years was too old. Then Dr. Bogue went on to consider the deciduous arches and the relationship of the oncoming permanents to the temporaries, and said : "It is evident that if the temporary teeth are in too narrow an arch at six years of age (and the arch will be too narrow if the temporary teeth are close together), if these first permanent molars erupt in line with the temporary teeth they also will be in too narrow an arch. So if the temporary teeth are not already spread apart at four or five years of age, spread them, for Nature cannot do it herself. She has tried since two and a half years and has failed. Spread them enough to allow the easy eruption of the four permanent incisors, which should stand, when fully erupted, just outside the arch formerly occupied by the temporary incisors. This will allow the upper teeth to lap over the lower ones. Spread the lower temporary teeth enough to allow the four lower permanent incisors and the cuspids to

form their perfect arch. For it is quite true that, leaving out of view extraneous influences, such as biting the lips, protruding the tongue, finger or thumb sucking, etc., the positions of the lower permanent teeth should control those of the upper arch, which, generally erupting later than the lower ones, are guided into their proper positions, not only by the tongue, cheeks and lips, but particularly by the cusps of these lower permanent teeth with which the upper ones should occlude. . . . The conditions which most call for our attention as orthodontists at this early age (four to six years) are two—prognathism of the lower arch and the continuance too close together of the temporary teeth, especially the six front ones up to this age. At four years of age these arches can generally be spread in from fifteen to ninety days, at small expenditure of time and money, and without pain if the child has been well brought up and has not been frightened. At five years of age it will take months to accomplish the same result, and at six years of age you can never be sure of results under two years, although the actual movement may have been made in two months. The longer one waits the greater the expenditure of time, money and possibly of pain, and the greater uncertainty as to the teeth remaining in the positions into which they have been brought. . . . If the child has been neglected, either by parents, physicians or dentists, up to the time that the permanent teeth are erupted sufficiently to fasten an apparatus upon them, they can even then be quickly spread with advantage to both nose and teeth. I started to write that at certain ages it is practically impossible to attach fixtures efficiently to the teeth to accomplish rapid spreading. But it is not at 'certain' ages, but very 'uncertain,' because the arrest in the development of the child, evidenced by the close arches of temporary teeth, may have retarded very considerably the time at which the temporary teeth fall out. It will be seen, therefore, that all tables giving the times of eruption of both temporary and permanent teeth are unreliable, varying with the individual. In the great majority of cases, an expansion arch of gold and platinum wire, 18 or 20 gauge, inserted in vertical tubes attached to bands on the second temporary molars and carrying lingual wires, will in a short time spread such a contracted arch and will also spread the nasal passages very considerably. I have generally been averse to employing rapid spreading on temporary teeth, for I have only desired to supplement Nature in her work. When the age of the patient obliges me to apply my regulating fixture to the permanent teeth, I should use 16-gauge wire. When the children have reached eight or nine years of age I do not hesitate to apply rapid spreading, separating within ten or fifteen days the two halves of the upper maxillary by means of a screw across the mouth as high up as I can get my attachment. At about ten years of age, when the temporary molars have just fallen out, there is no possibility, for a time, of attaching fixtures, for rapid spreading, to the erupting bicuspids and cuspids; so during that period the ordinary methods of orthodontia alone are applicable; prevention is no longer possible."[2]

Mr. J. G. TURNER, who, in the absence of Mr. Lockett, opened the discussion, said he was not quite sure whether Dr. Bogue was confining his dicta to the acquired deformity due to adenoids, or that the dicta might be taken as embodying his whole faith.

The CHAIRMAN thought Dr. Bogue had specifically omitted acquired influences, such as biting the lip, protruding the tongue, thumb sucking and so on, and was dealing with the question of adenoids as the great cause, and therefore the discussion should be so limited.

Mr. TURNER said it was important to point out that there were a large number of cases which were definitely congenital if not hereditary,

and they included one condition which Dr. Bogue said had to be carefully looked for in temporary teeth, namely, the prognathism of the lower arch. There might be other deformities indistinguishable as yet from the deformity caused by adenoids. He thought the Society owed a debt of thanks to Dr. Bogue for sending his communication. The doctor had been all his life a careful Dr. Bogue had said he agreed, but necessarily when so many points were put forward there was a great deal to criticize, although criticism was difficult in the absence of the author. Dr. Bogue was obviously thinking of adenoids, but there were a large number of people who would not accept *ex parte* statements on the adenoid question. In addition to those who said that adenoids were the chief factor there were a great number who said that the adenoids and the deformity were due to a common general factor, while others believed that the adenoids so far from being the cause of deformity of the jaw were caused by that very deformity, and, the jaw deformity was due to want of use leading to failure of development. There was also a large amount of that evidence brought forward in Germany to show that the whole thing was an hereditary condition. Obviously the dicta would have no weight with those who held that adenoids were not of such great importance, except as coming from a man who had thought the matter very carefully out and come to a definite conclusion. He should therefore like to know whether it was germane to the discussion to put forward the specially strong points of each theory of causation or take it for granted that the adenoid hypothesis was accepted *in toto*.

The CHAIRMAN asked whether Mr. Turner accepted *in toto* the adenoid hypothesis.

Mr. TURNER said he did, and therefore the Chairman suggested he should pass on to discuss the dicta. The first general criticism he would make was that some of them were too general and sweeping. If a throat specialist were asked his opinion of the fourth dictum, that "Hypertrophied adenoids may be discovered at a very early age through the presence of snuffles, ear trouble, paroxysmal cough, or mouth breathing," he would say that those were by no means necessarily present in the case of adenoids. With regard to the first dictum, "The regulation of the temporary teeth is a most important feature in modern orthodontia," it was a most important development, and it was only lately that people had opened their eyes to the fact that deformities could occur in the temporary arch of children. In connection with that there was the statement that "irregularities among temporary teeth are about as frequent as among permanent teeth." The answer to that obviously was that they were not, as otherwise it would have been obvious long ago that there were deformities. The permanent teeth were subject to irregularities arising from early extraction or prolonged retention of the temporary teeth ; and for another thing they were far more commonly affected by mal-position of the developing tooth germ. Those things led to a large class of deformity. The statement should be altered to some such statement as "irregularities due to adenoids or connected with adenoids." The irregularities observable in the temporary arch were such as were due to mouth breathing with failure of growth, slightly protruding upper jaw, V-shaped arches, V-shaped palatal arch, and temporary retention of the developmental position of the temporary incisors. The prognathism that Dr. Bogue especially called attention to in the lower arch was, to his mind, extremely uncommon. He had not yet met with a case in the lower jaw that he should have associated with adenoids. The opposite condition, the retrusion of the maxilla, was met with very frequently and was one of the recognised deformities. Whether that retrusion was ever due to an actual sub-

normal maxilla in the case of adenoid deformities he could not say, but it was due to a sub-normal maxilla in the case of some congenital deformities. With regard to the second dictum, "The prevention of dental deformities requires the retention of the deciduous teeth in their proper position and proper relations to each other until the permanent teeth are ready to erupt," that was outside the scope of adenoid deformities. He really did not quite know what was referred to.

The CHAIRMAN said if they were in their proper position they were bound to exercise their proper relation to each other.

Mr. TURNER said if the antero-posterior relation was included there would be a great deal too much qualification to allow of a single dictum. If it were going out to the world that the Society accepted the dicta very great care would have to be taken with the provisos. With regard to the fifth dictum, that was a statement which seemed to have been thrown together in a haphazard manner. The early discovery and removal of adenoids was true, but the thorough performance of mastication and breathing was by no means true. A thorough performance of mastication had nothing whatever to do with the early development of the jaws. Congenital idiot children who never had used their jaws for mastication would grow until their dental arches and palates were far beyond the normal. The function of mastication therefore in those children had nothing to do with the supernormal growth of the jaws. The whole stimulus to growth was given at conception and anything after that must be a positive interference. Irregularities in the temporary teeth were not, in his opinion, so frequent as among the permanent teeth. With regard to the seventh dictum, it might be true that breathing through the nose filtered the air and so might be a preventative of some diseases, but as yet such a statement was not supported by school dentists or others who came in contact with children. He had heard of a man in New York who made such a statement, but he could get no particulars. One would naturally think that air-borne diseases would be less if a person breathed through the nose than they would be if he breathed through the mouth, but there was no definite proof of it yet. With regard to the statement that "Underdeveloped dental arches are evidence of lack of vigour," that was only local. It might be that the fact that there was anything there at all was evidence of considerable vigour. Children might grow to their full stature and develop everywhere except in the upper maxilla, and if the child had not been vigorous it could not have grown in the way it had. Probably without such vigour it could not have supported the strain of swallowing the pus from the adenoids. The best thing to say in considering such a thing was that the removal of the sepsis of adenoids and of the interference with breathing would aid the child's development. But to postulate that the under-development of one single bone was due to a general want of vigour was obviously wrong. That mistake underlay the view of those who said that adenoids and deformity were due to thyroid insufficiency. It was only in a certain class, and by no means necessarily most of them, that any general deficiency of bodily growth was found. It was true that "protrusion of the front teeth indicate a narrowed arch" in adenoid cases, but why should it be brought in in that relation. With reference to the ninth dictum, that spreading of the temporary arches enlarged the nasal passages, Dr. Bogue had said that he had had some very successful cases, but he had not been able to discover any himself. The first difficulty was that there was no means of measuring the increased size of the nose. Dr. Bogue called attention to the fact that the upper incisors spread and that the two centrals definitely came apart under the rapid influence of the expansion arches. That looked as if he was

pulling apart the superior maxillæ at their suture and thus enlarging the floor of the nose, but actual scientific verification was wanting. With regard to the twelfth dictum, that the correcting of dental deformities aided correction of nasal stenosis due to deflections of the septum, it was not everyone who would accept that without very expert guidance. With regard to dictum No. 13, were there any measurements to show that the cranial cavity was smaller in the case of children with adenoid deformities ? It might be argued that the sutures right away to the base of the skull were interfered with, but he very much doubted whether there was any proof at all. With reference to perfectly close and regular teeth at five years of age constituting a marked deformity, when working at the London Hospital some ten years ago his argument was that if a failure of growth accompanied adenoids then there should be failure of the separation of the temporary teeth. As far as he could see $5\frac{1}{2}$ was a late date ; he should expect the beginning of separation at $4\frac{1}{2}$. It was possible by means of that sign alone to call attention to the fact that there was failure of growth, and practical experience showed that in most cases it was connected with adenoids. If the adenoids were taken away the child resumed its growth—growth was resumed, not overtaken. With regard to the normal arch of temporary teeth at $5\frac{1}{2}$ years of age corresponding in size to the arch of the ten front teeth of the permanent set, he did not think that was so. He thought more room was wanted than was obtained at $5\frac{1}{2}$. It was quite a question whether growth did not still go on at the inter-maxillary suture, and a continuation of that growth probably helped to account for certain cases of very undue prognathism of the jaw. He had definitely watched an increase in size at the eruption of the canine ; so that to say that at $5\frac{1}{2}$ there was as much room as at fourteen with the fully erupted ten teeth was hardly accurate. As to the possibility of opening up, an apparatus could do it very quickly, but it would be necessary to keep the space when it was obtained.

The Chairman asked whether the members agreed with the first dictum : " The regulation of the temporary teeth is the most important feature in modern orthodontia."

Mr. Northcroft said he did. Since 1907 he had strenuously advocated the regulation of the temporary dentition, and with the exception of accidental irregularities produced in the permanent dentition by extraction and so on, he had traced out practically every irregularity that could occur in the permanent dentition in the temporary one, with the exception of rotation of the temporary molars. He had been disappointed when regulating temporary teeth, that the permanent teeth, although erupting in a larger arch, were often rotated where he did not expect them, and they had to be turned. That sort of thing had happened with permanent canines where the temporary arch had been expanded, leaving ample room, but the permanent canines had deliberately come forward instead of dropping back into their places. He certainly thought it simplified all subsequent work to expand the temporary arch to its full limit.

Mr. Badcock asked how long Mr. Northcroft found it necessary to keep on the apparatus when expanding the temporary arches, and whether he found that having once expanded them the apparatus might be taken off, trusting to the permanent teeth to erupt in the expanded arches.

Mr. Northcroft said he had always left an apparatus in the mouth for at least two years. He generally began at six years of age and in some cases five and a half. It was possible to see the first permanent

molars coming down in the expanded arch, and his theory had been that if the permanent molars came down in newly formed bone in an expanded arch, the arch would not contract. It was not the same thing as moving the bony socket outwards.

The CHAIRMAN said he thought it would also be agreed that adenoids were a cause of dental, nasal and facial deformities, though he did not know whether everybody would agree that the adenoids should be removed as early in life as Dr. Bogue mentioned.

Mr. TURNER thought the earlier the better.

The CHAIRMAN said it was his experience that the general practitioner put off the operation as long as possible, and in many cases postponed it so long that it was not done at all. He himself was strongly in favour of having it done at an early age.

Mr. NORTHCROFT said the only case in which he had ever definitely seen evidences of growth of the palate after removal of adenoids without artificial aid was in the case of a child who was operated upon at the age of three months. Although the child was post-normal he had a most beautifully developed arch, with wide spaces between the temporary teeth, and a beautifully formed palate.

The CHAIRMAN said he was surprised and pleased to hear what Mr. Turner said about dictum five. He thought that the importance of the function of mastication had been much exaggerated by Dr. Sim Wallace and others, although one must agree with Prof. Keith that primarily the strong development of the malar bones and of the mandible was due to the powerful muscles of mastication being used with strength and vigour. But there were cases where the parents had those bones well developed, while the children had very long faces, and in those cases he thought the cause would be found to be mouth breathing. Also some of the negro tribes whose arches were wonderfully developed, had mealies as a staple food. He agreed with Mr. Turner that undeveloped maxillæ might co-exist with splendid general development and vigorous physique. He had no experience in restoring nasal breathing by spreading the arches of temporary teeth. Mr. Turner was directly in conflict with Dr. Bogue on its possibility, and it was a pity a point of fact such as that could not be decided definitely.

Mr. NORTHCROFT said that while not saying that the suture was opened, observers such as Bogue must have seen the space between the central incisors increase and he should like to know how Mr. Turner would account for that increased space.

Mr. TURNER said he had every reason to believe Dr. Bogue when he said that there was separation, but the point he wanted to have proved was the definite enlargement of the nasal passages.

Mr. NORTHCROFT asked whether Mr. Turner had any idea of what happened to the septum when the palate had been separated in the middle.

Mr. TURNER said he had asked some of his friends and they could give him no hope at all of altering the curvature of the septum by means of separation.

The CHAIRMAN thought it was a suggestive fact that deviation of the septum did not occur before the age of seven, which was about the time when the influence of the adenoids was at its worst. It seemed to him that the only real satisfactory test of expansion was whether it removed the stenosis after the adenoids had been removed.

Mr. TURNER said that if it was proved to be beneficial in only 50 % of the cases, orthodontists would be willing to advise every case being done. It should be undertaken early when there was a chance of separating the two maxillæ.

Dr. H. LAMBERT LACK, who was prevented from attending the meeting, contributes the following :—

With many of Dr. Bogue's dicta I agree ; some come in the special domain of the dental surgeon, others invite the criticism of the laryngologist. Without being unduly critical No. 4 strikes me as hardly scientific. Adenoids may be discovered and their amount accurately ascertained by means of a proper examination, and this examination should always be carried out when there is irregularity of the teeth or any other symptoms which may be ascribed to their presence. The symptoms enumerated are neither constantly present in adenoids, nor, when present, are they characteristic of adenoids. The second part of No. 4 deals with an operation which is, I take it. not a usual part of Dr. Bogue's work, for the removal of adenoids is far from bloodless (it is a particularly dirty operation), and if no anæsthetic is given it is extremely painful. Worse than these assertions there seems an assumption that it would be well if adenoids were always removed during the first year of life and that thus the troubles due to adenoids could be prevented. In my experience, and I believe in that of all my colleagues, adenoids are rarely found during the first year of life, but most commonly commence at later ages, and usually after the child has had one or more of the infectious fevers. I doubt if irregularities of the temporary teeth are nearly as frequent as those of the permanent teeth, simply because mouth-breathing is more frequent in older children. Further operations at one year of age and even up to three, are usually very difficult and consequently imperfect, and recurrence is the rule. It is not, therefore, advisable to operate so early.

No. 9. The statement that spreading the arches of temporary teeth enlarges the nasal passages is unproven. Is there any reliable evidence ?

12 and 13 again assume that all irregularities commence before the sixth year. I entirely agree that it is most important to correct these irregularities directly they occur, but I am certain they frequently commence after the sixth year. That correcting dental deformities aids correction of deflection of the septum is another statement without evidence.

With No. 14 I entirely agree. I think Mr. J. G. Turner should be given the credit of having first pointed this out. He ascertained and demonstrated this defect as the result of numerous observations in my out-patient department at the London Hospital. I do not wish to trespass out of my province, but surely prognathism of the lower arch is an extremely rare deformity, whilst the crowding of the six upper teeth combined with an open bite is extremely common.

Finally I would like to say a word upon the cause of these dental irregularities, which, I believe to be simply and solely the mechanical result of the open mouth, and that mastication, absence of nasal respiration and other causes have nothing to do with it. When the mouth is open the tissues of the cheeks are put on the stretch, and this pressure exercises a lateral compression upon the upper jaw, and, to a less degree, upon the lower. The deformity of the jaw is exactly what one would expect from this lateral compression. The demonstration that this was the sole and sufficient cause of the deformity arrived

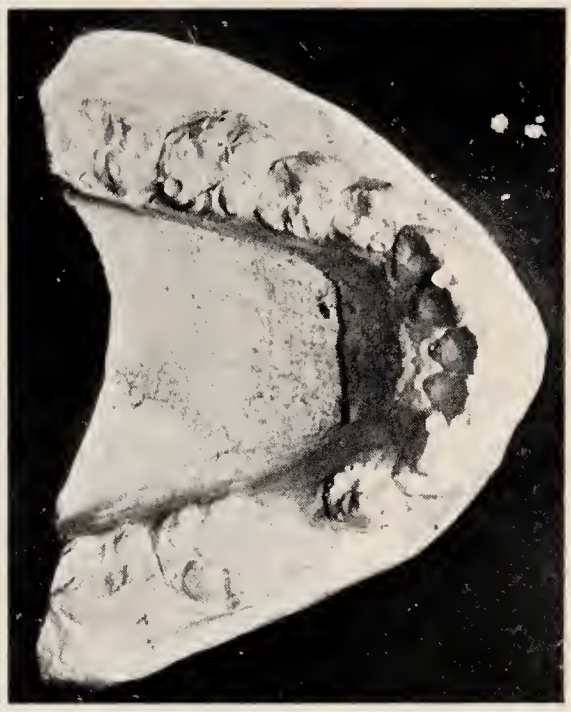
to me one day in the person of a boy aged twelve who had been a mouth breather from an early age, and had suffered since two years old from unilateral facial paralysis. In this case one side of the face was flaccid, consequently there was no pressure exerted on the jaws on this side. Mr. Turner and myself eagerly examined the mouth and teeth. On the paralysed side the arches were normal, on the healthy side where the lateral compression existed there was the typical adenoid deformity. One case, although a complete demonstration, might perhaps be explained away, and this combination of circumstances must naturally be very rare. However, I am glad to say a second identical case turned up at Glasgow and has been fully reported.

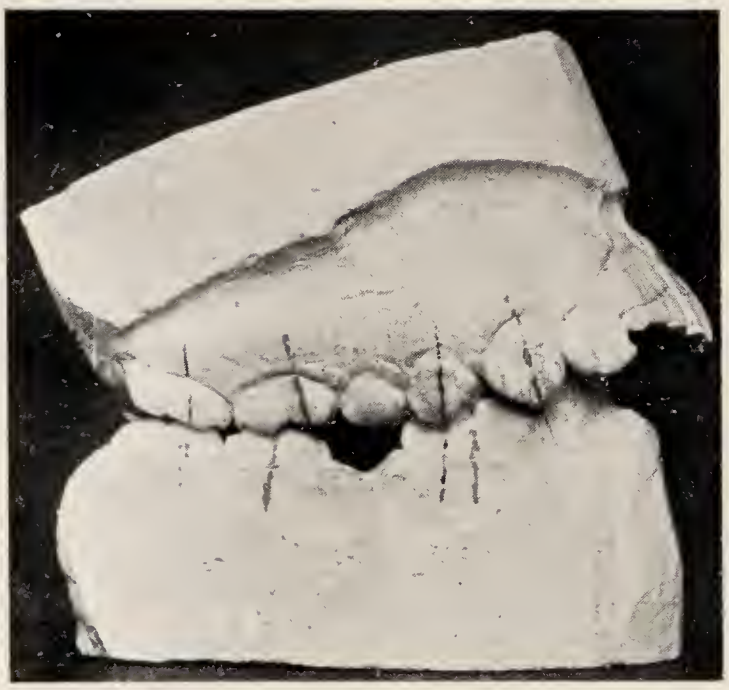
The deformities of the jaw have been ascribed to a diminished air-pressure in the nose. This can only result from anterior nasal obstruction, whereas adenoids are posterior. Moreover, none of these theories explain the existence of the deformities in cases of complete congenital occlusion of the posterior nares. In this rare condition, when both sides are affected and nasal breathing has been absolutely prohibited from birth, there is the most marked lateral compression and deficient development of the upper jaw. In these cases there could never be a negative pressure in the nose, and the nasal passages are often well developed. When the posterior nares are occluded on one side only, there may be deformity of the upper jaw or there may not ; it depends entirely upon whether one nostril is sufficiently patent to allow free nasal breathing. If there is deformity it is bilateral, because the open mouth exercises equal pressure on both sides, whereas if the deformity were due to deficient pressure of the air passing through the nose, one would expect the deformity to be unilateral. I think, therefore, it is demonstrated that the lateral compression of the upper jaw and the crowding of the teeth are due to one cause and to one cause alone, namely, the long continuance of an open mouth, whether due to adenoids or any other cause.

The CHAIRMAN in proposing a vote of thanks to Dr. Bogue for sending his communication, said the great lesson to be learned from the discussion was that the prevention of irregularities should be tackled at the earliest possible moment.

The thanks of the Society having been accorded to Mr. Highton and Mr. Northcroft for their casual communications, and to Mr. J. G. Turner for opening the discussion, the Society adjourned until Wednesday, 13th November.

A Case for Treatment.





To Illustrate Mr. J. G. Fernie's Communication.

A Case of Impaction of all Four First Molars.

To Illustrate Mr. E. Preedy's Communication.

Model showing an Impacted Upper Right Second Temporary Molar.

The two temporary molars are from the second case quoted —patient aged 30.

To Illustrate Mr. J. Lewin Payne's Communication.

ORDINARY MEETING.

An ordinary meeting of the British Society for the Study of Orthodontics was held at 11, Chandos Street, Cavendish Square, W., on Wednesday evening, 13th November, 1912, Mr. H. Baldwin, President, occupying the chair.

The Hon. Secretary read the minutes of the last meeting, held on the 9th October, 1912, which were confirmed.

The following gentlemen, approved by the Council for election, were balloted for and declared unanimously elected members of the society :—

Frank Bocquet Bull, L.D.S.Eng., 2, Carlton Gardens, Herne Hill, S.E.

Charlie Lees, L.D.S.Eng., M.R.C.S., L.R.C.P., D.D.S.Penn., Breifond, Boyne Road, Tunbridge Wells.

A Case for Treatment.

By Mr. J. G. Fernie.

Mr. J. G. Fernie described by means of several slides the case of a girl aged fifteen, who about four years ago knocked out the right upper central while performing gymnastics. It was put in again by a dentist, had been there ever since, and was apparently in a sound condition. The left lower bicuspid was very badly decayed, so that he took it out and also extracted the corresponding upper bicuspid and the right upper bicuspid as well. He intended to take out the right lower bicuspid, but the patient, who had been in India all her life, was down with malaria and treatment was suspended for the present. He brought the case before the notice of the members with the object of getting their ideas as to treatment.

The President asked what the patient looked like.

Mr. Fernie replied that the patient had a very narrow face ; she was very small altogether. The front teeth were objectionably prominent, and he thought the lower lip would get behind them.

The President said it was a difficult thing to know what to do for the best in such a case. He understood that the upper second bicuspids had been removed and the left lower, but the right lower second bicuspid was still in the mouth. There was a considerable amount of apparent superior protrusion which spoiled the look of the girl, and the left central was a dead tooth. There was a considerable amount of contraction of both jaws. The question to be considered was, what were the proper methods of treating such a case ?

Mr. Badcock said he understood that the author was obliged to remove the lower bicuspid because it was decayed. It was possible to correct a case of post-normal occlusion in one of two ways. It was possible either to advance the mandible and so get the two arches to fit one another, with a proper occlusion, or remove two teeth from the upper and so get the arches to correspond. But if teeth were removed from the lower it made the case doubly difficult. He would like to ask the author why he chose to remove the second premolars.

Mr. Fernie replied that he took the second lower one out because it was decayed, and therefore he took the corresponding one out.

Mr. Badcock, continuing, said that again made the case rather more difficult to treat. That having been done, it seemed to him that the only course open to the author was to draw back the pre-molars and the anterior teeth ; and in spite of the fact that one of the centrals was devitalized he still thought that would probably be the best thing to do. If the space left by the extraction of the lower pre-molar could be preserved in any way it should be. If, for instance, by means of a couple of inlays and a little piece of wire between to keep the teeth apart the space could be preserved, undoubtedly the subsequent result would be very much better. He had not had the models in his hand, and it was rather difficult to judge of the case by seeing the photographs on the screen for a few seconds, but if expansion seemed to be desirable he did not see any reason why it should not be done at the same time, even although the child was fifteen years of age.

Mr. W. Rushton thought one should not think of expanding in a patient aged fifteen ; it was waste of time. If the fourth bicuspid was extracted and a lower plate was put in to get the lower teeth into decent alignment, getting them a little further back so that they would not impinge against the superior teeth, and then, when the lower incisors were retracted and in good alignment, if he proceeded to do the same with the upper front teeth he would obtain quite a respectable result. He had seen several such cases where that method had been successfully adopted.

Mr. C. S. Morris asked Mr. Rushton whether he meant that he would pull back both the upper and lower teeth to the position in which they were originally in a state of post-normal occlusion, because if that was the case he would get an enormous over-bite of the upper teeth. He imagined that if he did so he would have to extract the upper incisors because of pyorrhœa in ten or twelve years' time.

Mr. Rushton replied that he would chance over-bite and he would also chance the pyorrhœa, rather than a tedious expansion, which would be just as likely to produce pyorrhœa.

The President said that Mr. Rushton evidently thought that expansion in the case of a girl fifteen years old was useless, because contraction would inevitably recur. Supposing the patient could be seen sufficiently often, he would be in favour of trying to restore things as far as possible to the normal. He was in favour of trying expansion, which he had no doubt could be done ; the only question to consider was whether Mr. Rushton was right in thinking that it would inevitably contract again at that age. He thought with Mr. Badcock that in a case of post-normal occlusion it was very important to do everything one could to save everything savable in the lower jaw, and not to extract everything in the lower jaw, and make it smaller still. The author had stated that the second lower bicuspid was too bad to be saved, so that that could not be helped. Taking the case as it stood, at present he would be inclined to expand both the jaws by means of plates, and afterwards to pull back the upper front teeth as far as possible into a good position, beginning with the first bicuspids. He did not suppose the dead incisor would suffer much in the process of being shifted. He did not quite gather from the author whether he drilled into the diffluent remains of the pulp which would be there. If not he suggested that that should be done and the root filled. A retention plate for the upper jaw to prevent contraction afterwards was a very simple thing, comprising a thin vulcanite plate in the palate touching the necks of the teeth all round. The patient got perfectly used to it ; he could keep it clean ; it did not do the slightest harm, and he could wear it for a long time.

Mr. C. S. Morris said that, of course, the case would require the front teeth to be pulled in as well as expansion.

The President thought that was so.

Mr. Morris said it would be necessary to have a retention plate to prevent the contraction, and the original position being resumed, as well as having some kind of a bar or wire in front to keep the front teeth in.

The President said that in his view that would not be necessary. He thought the expansion would be obtained, and that there would be no tendency for the front teeth to go forward. He thought the whole reason of the front teeth being prominent was because of the contraction back. The sides were squeezed together and that had forced the front teeth forward. If the contraction was done away with and the second bicuspids pulled back, he did not believe there would be any tendency for them to go forward again.

Mr. Morris said that with regard to the lower he thought undoubtedly the best thing was to reserve the space on the left side by inlays as Mr. Badcock suggested. Taking the other tooth out on the other side would land the patient in the same original difficulty.

Mr. Harold Chapman entirely agreed with the President that the laterals were very much squeezed in and would clearly prevent the centrals being pulled back unless they were widened. He would like to have heard from Mr. Morris a little more about over-bite, which seemed to him a very serious problem. The question of depressing the incisors or elongating the molars seemed to be out of consideration, and the only alternative that occurred to him was to shorten the incisor teeth and canines by grinding the incisal edges, so that the upper incisors could be pulled still further back without affecting the position of the lower ones.

The President said it struck him that the lower incisors would have to be ground on the tips, although not very much, to get them out of the way. It would not, in his opinion, be worth while to put in a biting plate to begin with, because the patient was so old. The lower incisors could be got sufficiently out of the way and the upper incisors be brought in by grinding on the tip to a moderate extent from time to time as occasion required.

Mr. J. G. Fernie, in reply, thanked the members for their remarks, but he was still rather hazy as to what to do.

A Retained and Impacted Upper Second Temporary Molar.

By Mr. J. Lewin Payne.

Mr. Payne exhibited an upper model taken from a female aged twenty-six or thereabouts, showing a second temporary molar lying almost level with the mucous membrane of the gum, the right first premolar leaning distally and inclining towards the first permanent molar. It was very uncommon to find such a condition in association with an *upper* temporary molar. He regretted he could not exhibit the lower model. As the model dealt with the question of retained temporary teeth, he would also pass round a couple of second temporary molar teeth likewise retained to the age of thirty, which were only removed a week or two ago. Those teeth, so far from showing any signs of the ordinary physiological absorption, showed signs of exostosis, or what was rather more correctly termed proliferating periodontitis.

The President said he had seen quite a number of such cases where a second temporary molar had been retained to adult age. The first bicuspid and the first molar had gone on growing, and had apparently, by a tendency to approach each other, squeezed the temporary molar right up into the gum, so that the masticating surface of the temporary molar was on a level with the gum. He did not know whether the temporary tooth had been squeezed up, or whether it was only an apparent squeezing up due to the great growth of the alveolar process to accommodate the roots of the growing permanent teeth. He had seen quite a number of them in the lower jaw, but he did not remember ever having seen one in the upper. It was well-known that the second molar was one of the most frequent temporary teeth to be retained more or less throughout life through the non-development of the second lower bicuspid. But as a rule the second temporary molar did not get crowded down until its masticating surface was on a level with the gum ; it took a normal level with the permanent teeth, took its proper place in mastication, and remained efficient as a member of the permanent set. In not a few cases, however, it assumed the peculiar condition described by the author. He remembered the case of a young man aged about 25 in whom the condition, as far as the second temporary molars were concerned, existed in the lower jaw. The tops of both second temporary molars were on a level with the gum, and the adjacent permanent teeth were standing high above them, bending over them and completely impacting them in. He watched the case for a good many years, and in time the right lower temporary molar got quite loose by absorption of its root, and quite pink through the absorbent organ, or whatever was doing the absorption, hollowing out the whole of the dentine from the crown of the temporary molar. He removed the tooth quite easily because it was loose. In order to make it symmetrical, he thought he would remove the tooth on the other side as well, but he afterwards wished he had not touched it. It looked horribly impacted between the permanent teeth ; it seemed to have a lot of root as well as being impacted ; it was exceedingly tight, and he finally broke it and left the temporary molar root in.

Mr. Doherty said that if he had known the author intended to bring forward such a case he would also have shown one that he intended to bring forward later on, where the first temporary molar on the right side was impacted. He thought at first it was the first premolar about to erupt, and that the temporary molar had been already lost. The tooth did not show any signs of erupting, and on making an examination the probe slipped into what appeared to be a cavity. He packed the gum away, and then discovered it was the crown of the temporary molar after all. He extracted it and the premolar was now erupting in its place. The second temporary molar was standing. He would like to know whether that was due to the second temporary molar coming forward and squeezing down the first temporary molar, or whether it was the first temporary molar not really erupted.

The President said that in that case the successor was developed. As a rule the successor was not existent. It showed that one ought to be on the lookout and ought to have in mind the naked eye anatomy of the crowns of the temporary teeth.

Mr. Doherty said there was only a mere point showing through the gum in that case.

Mr. Badcock said that in his experience the case described was a very rare one. He had seen quite a large number of temporary teeth held down, and which had not risen to the level of the permanent

teeth, but of the second temporary molars he could not remember one in the upper ; he thought they had all been in the lower. The second lower premolar was quite commonly absent, but he did not remember ever having seen another case of an absent first temporary molar. He was not quite sure that the term "impaction" was a correct one to use in such cases, because the term "impaction" implied onward progress of the tooth prevented by obstruction. That was not the case, as he understood the pathology. He believed the temporary tooth remained at its original level and made no attempt to rise. Normally the temporary teeth were carried up with the growth of the alveolus, and sometimes if they had no successors they would rise high up in the normal level and come into line with the surface of the permanent teeth. But if that did not occur and they remained at their original level, the teeth on either side fell over them. But he did not think that could very well be described as impaction. He sympathised with the President in his abortive efforts to remove a temporary molar, the more so as he (Mr. Badcock) had a case in which the remains of two temporary molars still existed in the lower jaw. He vainly endeavoured on two or three occasions to remove them. They were held in by the teeth on either side ; they were very deep down and they were extremely difficult to remove.

The President said with regard to the use of the term "impacted," the question whether a tooth like that described was to be considered impacted or not depended on the definition given to the word. He did not think it had ever been defined very satisfactorily in the dental surgery books, so that different ideas might exist as to what was meant by an impacted tooth. What he meant by an impacted tooth—and he thought it was the definition which would serve their ends most completely as dental surgeons—was a tooth which, in the process of its eruption, had become so held by contact with another tooth or teeth, or with a tooth and part of the jaw, that its removal in the ordinary way was rendered extra difficult or impossible. He would call the case described by the author a very good instance of a tooth being impacted. It was absolutely held by teeth which had overlapped it and grown over it, so that its removal in the ordinary direction, *i.e.*, in the line of the long axis of its root, was absolutely impossible. Such teeth, if they were extracted at all, had to be pulled out sideways, at right angles to the proper direction for taking out a tooth.

Mr. J. Lewin Payne, in reply, said he was inclined to agree with Mr. Badcock regarding the relative position of the temporary molar and the permanent teeth. It seemed to him that the temporary molar was in approximately the same position as it originally occupied after eruption ; that the permanent teeth had come down as they naturally would with the growth of the alveolus, and that therefore impaction was a secondary matter. He could confirm the points which had been brought forward with regard to the difficulty in extracting some of these temporary teeth. In all three cases to which he had referred difficulty was experienced in extraction. The two lower temporary molars gave quite as much resistance as most permanent molars that he had had to extract, and, as the members would observe, there had been some chronic periodontal trouble in connection with the teeth.

The Fixation of Clamp Bands.

By Mr. Harold Tattersall.

Mr. Harold Tattersall described his method of fixing clamp bands. He said he used a mixture of gutta percha and eucalyptus. He first of all fitted the bands and left them on for a week ; at the end of that

time he took them off and cleaned them, made the mixture of gutta percha and eucalyptus, spread it on the inside, forced the bands on and screwed them up. The bands had been on for four months, and they seemed perfectly clean on the inside. Some of the gutta percha stuck to the clamp band very tenaciously and some to the tooth. He mixed it on an Evans' heater. He had fixed some bridges in which the abutments were shell crowns in a similar way for the last four or five years, and they remained on very well; it was difficult to get them off.

THE PRESIDENT said that for similar purposes he had for many years used a solution of gutta percha in a mixture of eucalyptus oil and chloroform. He had never tried eucalyptus oil only as a solvent for gutta percha, although of course it would resolve it completely.

Mr. NORTHCROFT said he noticed that the clamps used by the author were open clamp bands. He desired to draw the attention of the members to the value of the all-closing clamp band, which would save a great deal of annoyance if it was used. He had found especially in the lower molars that an open band was likely in some mouths to cause caries of the lingual side of the lower molar, but he had never found a case of caries occurring in any mouth with the use of the all-closing clamp band. Whether gutta percha or cement was used in its fixation he thought the all-closing band was a very desirable one to use.

THE PRESIDENT enquired whether Mr. Northcroft made his all-closing clamp band in the workroom or bought it on the market.

MR. NORTHCROFT replied that he was in the habit of using bands that he obtained from Aderer of New York. They were precious metal bands and were rather expensive, but they could be made in one's workroom. The Blue Island people also introduced the all-closing clamp band, largely made in German silver. The principle of the all-closing band was adopted now by most orthodontic apparatus manufacturers.

Mr. MORRIS entirely agreed with Mr. Northcroft's remarks in regard to Aderer's bands, which he was induced to use after seeing Mr. Chapman's demonstration at the Annual General Meeting of the B.D.A. last year. The expense was nothing compared with the ease with which they could be worked, and the number of times that points and spurs could be soldered to them without damaging. They lasted out two or three of the ordinary German silver bands, and in spite of the expense he would certainly never go back to the use of the ordinary German silver ones.

MR. TATTERSALL enquired whether Mr. Northcroft knew the intrinsic value of a precious metal band after it had been used, because the bands made of base metal were worth nothing when they were finished with.

Mr. NORTHCROFT replied that he believed the value was now 14s., having risen with the rise in platinum.

MR. MORRIS said he thought the precious metal bands would wear out three of Angle's.

MR. TATTERSALL, in reply, thanked the members for the remarks they had made.

A Case of Impaction of all Four First Molars.

By MR. E. PREEDY.

Mr. PREEDY exhibited a model of a case in which the patient was a girl of ten years of age, the daughter of an American lady, who always showed extreme care and interest in her children's teeth, and who was very disappointed when he regretted he could not see his way clear to

filling her temporary teeth with gold. The mother died two years ago, and during the recent summer the father took the child to America, and on his return he came to him (Mr. Preedy) very much perturbed. During her visit to the States the child had been taken to see her uncle, who was a medical man, who had examined her mouth and said that her jaws were very under-developed. He stated there was not sufficient room for her permanent teeth to erupt, that American dentists were devoting a lot of time and attention to the matter, and that he strongly advised that her jaws should be expanded with plates at once. The father wished him (Mr. Preedy) to undertake the work. He regretted that he could not see his way clear to do so, and he would be glad of an expression of opinion from the members on the subject. There was a certain amount of truth in what the American doctor said, in so much as it would be seen by the models that the six-year old molars had not been able to erupt properly ; they were semi-impacted behind the lower temporary molars. Advanced orthodontists might possibly suggest a method of releasing them by increasing the length of the mandible posteriorly, but personally he did not see his way clear to undertaking the expansion, because by doing so he thought he would have converted the features of a pretty child into the face of a prize fighter.

The PRESIDENT said the upper teeth were in a very good arch, but the permanent canines had not appeared and there was practically no room for them. The lower was also a good arch, but not quite of normal width, and again there was no room for the permanent canines. The author had stated that the appearance was good, but he thought it would not be improved by expanding the arches and making the front teeth a little more prominent. It must be remembered that the use of reciprocal traction lengthened the arch posteriorly in the upper jaw by pushing back the six-year old molars, so that all the space gained was not obtained by pressing forward the front teeth. It seemed to him, as the author had stated that the appearance was now good the arches were fairly well formed, and the occlusion was likely to be better ; it would reduce the tedium of the case very much to extract the first bicuspids when they came and that would practically do the whole of the necessary regulation. The curious condition existed that the six-year old molars, which had been in place presumably for four years, were still extremely short and not in antagonism, and they did not show a proper tendency to lengthen.

Mr. VISICK said he would feel inclined to put in an upper and lower expansion plate on the temporary teeth. The six-year old molars were in a considerably larger arch than the temporary molars, and it would be an advantage to the patient to have the temporary molars widened, making the arch larger, and at the same time to bring the upper incisors together. That could be done quite easily by running a wire up just behind the lateral incisors, so that as the space widened it would draw the incisors together and hold them in position, because there was not anything like enough room for the permanent canines to come in position everywhere. The laterals were comparatively near the first temporary molars, and at the same time the bite could be raised by the lower incisors biting on the expansion plate.

The PRESIDENT enquired whether Mr. Visick would use plates for expanding both the upper and lower jaws or whether he would put on bands and wires.

Mr. VISICK replied that he would put in expansion plates.

In reply to a remark by Mr. Lacey, the PRESIDENT said he would not call the case one of impaction of the six-year old molars. It was

want of growth. The molars could be pulled out in the ordinary direction.

Mr. LACEY said the necessity for what had been stated was very much brought to his mind recently by a case in which he found that the third permanent molar in the upper was erupting in a forward direction, a most unusual thing in an upper case, and seeing that in the case the author had brought forward the teeth were so pressed forward, he thought it was possible there might be some material development further back. That he thought ought to be eliminated before anything was done with the front. The crowding or the holding down of the first molar seemed to be very abnormal and to suggest other abnormalities.

Mr. NORTHCROFT pointed out to Mr. Visick that if the child was ten years old it was a very risky thing to expand temporary teeth at that age. Expansion of the permanent teeth underneath was not obtained when the roots of the temporary molars were absorbed. Expansion had to be commenced in children at an earlier age, when the crowns of the permanent teeth were still contained by the temporary roots before absorption commenced.

Mr. W. RUSHTON pointed out that it all depended on what apparatus was used for expansion, whether an arch or a plate. If a plate was used not only were the teeth expanded, but also the whole jaw, so that expansion was obtained on the permanent teeth as well as on the temporary.

Mr. NORTHCROFT said he had always held that that occurred to a very limited extent. In the particular instance under discussion he thought that the temporary molars were probably lost, and then he defied Mr. Rushton or anybody else to expand the premolars before they had erupted. If the temporary molars were lost the treatment had to be stopped in any case, and if an attempt was made to expand loose temporary molars they would probably be pushed out of the jaw.

Mr. RUSHTON said that the temporary molars were lost at a very uncertain age, and probably it would be quite possible to expand the jaw before the second temporary molars were lost.

Mr. HAROLD CHAPMAN asked Mr. Northcroft if he would not undertake the treatment of a case where the eight temporary molars were in place at ten years of age.

Mr. NORTHCROFT replied that his treatment in that particular instance might not consist in expanding the arches at all. He did not say he would not undertake treatment ; he said he would not expand the temporary teeth.

Mr. HAROLD CHAPMAN said that he meant in any case, not the particular one under discussion.

Mr. NORTHCROFT replied that he did not think it was really sound treatment at that age. If an arch was put on the jaws were probably expanded by negative means rather than positive, *i.e.*, the outward pressure of the cheeks was reduced. Especially was that true of mouth breathers. By putting on an arch the outside pressure was done away with and the tongue would actually expand premolars as they erupted. He had noticed that happen in several cases. He had not put a particle of expansion on premolars and they had gone out the width of a tooth. There no positive expansion of the arch was obtained ; it had always been his idea that by reducing the pressure outside the arch a normal condition going on inside was obtained. In that particular case it was obvious that expansion would not correct the condition without some

antero-posterior treatment as well. He thought the molar teeth ought to be placed further back in the mouth. It was desirable to stimulate development at the back of the mouth. It was obvious the lower six-year old molars had erupted in a jaw which was too short and were absorbing the backs of the second temporary molars and he certainly thought they ought to be put backwards in the mouth. It was almost impossible to give a definite opinion on such a case without seeing the patient, models being so extraordinarily deceptive. He had a patient under treatment in which the two temporary molars had been removed and the lateral was touching the first premolar on one side and the upper first molar was touching it on the other side. There was now room for the second premolar and the canine and absolutely no alteration in the child's features. That had been done partly by natural expansion, and the backward movement of the six-year old molars. He incidentally obtained reciprocal pressure by rotating the lateral. Personally he would undertake the treatment of the case described by the author, with a view to retaining all the teeth. It must be remembered that although the child might look very pretty and petite at present, if she was going to have a petite mouth when her head was fully grown and her nose was fully developed, her mouth would inevitably have a pinched appearance. That had occurred in his own profile simply because of the extraction that was performed early in life. Photographs showed that early in life he had an extremely small nose, and no one would have imagined that it would have grown to the enormous size it was at present. Another patient, a child, he had watched for about ten years. Her mother was what was called a very large-featured woman, but the child had rather a small face, in fact, looked an extremely delicate child. But when she was about seventeen her face was nearly as big as her mother's. Children changed enormously in that way. If a case was followed up closely it was possible to see the changes that took place. He was sure that the under-development, or the development of the face that did not take place in a great many instances, was due to lack of development about the jaws.

Mr. E. PREEDY, in reply, after thanking the members for the kind way in which they had discussed his contribution, said he was afraid he should not follow Mr. Northcroft's or Mr. Visick's suggestion of expansion. The President's idea seemed to him the most sensible, namely, that if crowding did occur later in life the removal of the first bicuspids would solve the whole difficulty. A point which he thought had been overlooked by most of the members was that the child was growing very rapidly, and he had every reason to hope the jaws would grow considerably in the next two years. If she could be saved the trouble, discomfort and worry of wearing plates during that time he thought it would be a gain.

The PRESIDENT, having thanked the gentlemen who had brought forward communications and those who had taken part in the discussion, adjourned the meeting to December 11th.

ANNUAL GENERAL MEETING.

THE Annual General Meeting for the year 1912 was held at the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, W., on Wednesday, December 11th, 1912, Mr. Harry Baldwin, President, in the chair.

The Hon. Secretary read the minutes of the last meeting, which were confirmed.

OFFICERS AND COUNCILLORS.

The following gentlemen were nominated by the Council, and were accepted by the meeting :—

President	Mr. MONTAGU F. HOPSON
Immediate Past-President ..	Mr. HARRY BALDWIN.
Vice-Presidents	Mr. W. FRANCIS MELLERSH.
	Mr. NORMAN G. BENNETT.
	Mr. J. E. SPILLER.
Secretary	Mr. HAROLD CHAPMAN.
Treasurer	Mr. H. C. HIGHTON.
Curator	Mr. B. MAXWELL STEPHENS.
Editor	Mr. CARL SCHELLING.
Librarian	Mr. J. W. DOHERTY.
Councillors	Mr. J. LEWIN PAYNE.
	Mr. C. F. RILOT
	Mr. HEDLEY C. VISICK.

On the motion of Mr. Northcroft, seconded by Mr. Payne, Mr. Mellersh was appointed an auditor of the Society, and on the motion of Mr. Mellersh, seconded by Mr. Payne, Mr. Malleson was also appointed an auditor.

REPORT OF HON. TREASURER.

The Hon. Treasurer said he had much pleasure in reporting that the statement of accounts for the year showed a substantial increase in the Society's bank balance, by the amount of £29 13s. 6d. The year was commenced with a balance of £51 7s. 4d., the amount received in subscriptions was £91 7s., compared with £87 3s., the amount received during the period December 1st, 1910, to November 30th, 1911. With regard to the expenditure, the cost of administration had been decreased by £10 8s. 6d., although he was compelled to add that less had been paid for materials for purposes of illustration at the meetings ; but as an offset to that, the Society had had more frequent use of the epidiascope.

The available balance was £81 os. 10d.

As referred to in the last report by his predecessor, there had been many calls on their revenue during the early years of the Society which were not likely to recur, hence the Society might hope for a continuance of better bank balances in the future.

The following was the statement of accounts from December 1st, 1911, to November 30th, 1912 :—

Receipts.

1910-1911.				1911-1912.		
			To balance brought from last account—			
£36	16	0	Cash at bank	£50	2	0
		10	Cash in hand	1	5	4
87	3	0	Subscriptions received during year.. ..	91	7	0
			From B.D.A. for hire of B.S.S.O. Lantern..	1	6	0
£123	19	10		£144	0	4

Expenditure.

1910-1911.				1911-1912.		
£15	15	0	By rent	£15	15	0
15	15	0	Reporting	12	12	0
14	12	11	Printing and Stationery	13	16	1
7	4	6	Printing and circulating Mr. Spiller's paper	7	4	0
4	14	8	Process Blocks			
1	2	0	Library Books			
4	5	6	Lantern Accessories	4	5	0
			Lantern Slides, etc.	0	13	1
5	1	6	Refreshments	5	1	6
4	0	11	Postage, 'Phone and Sundry Expenses ..	2	17	4
£72	12	6		£62	4	0
51	7	4	Balance carried to next account—			
			Cash at Bank	81	0	10
			In hand Hon. Sec. 12/2			
			„ Hon. Treasurer 3/4	0	15	6
£123	19	10		£144	0	4

We have examined the books and vouchers and certify the above statement of accounts to be correct.

W. Francis Mellersh, } Hon.
J. E. Spiller, } Auditors.

On the motion of the President, the Treasurer's report was adopted.

Hon. Curator's Report.

The Hon. Curator reported that during the past year there had been no notable additions to the Museum. Lantern slides, papers and casual communications had been included to a considerable number. He desired once more to appeal to members for gifts and loans of apparatus and interesting models.

On the motion of Mr. Northcroft, seconded by Mr. Morris, the report of the Curator was adopted.

Report of Hon. Librarian.

The Hon. Librarian reported that during the past year the following books and journals had been presented to the Library :—Copies of the German Journal of Orthodontics, presented by Mr. Badcock ; " School Dental Clinics," by C. E. Wallace, presented by Mr. Rushton ; and several numbers of the Transactions of the American Orthodontic Society. He again appealed to members to bring forward the names of any books they thought should be added. The Library was still small and not so much used as it should be. He would be glad of the co-operation of the members in that respect.

On the motion of Mr. Rushton, seconded by Mr. Stephens, the report was adopted.

Hon. Secretary's Report.

The Hon. Secretary reported that seven meetings had been held during the year, including the annual general meeting, which was now devoted to the main object of the Society, as the business transacted at the annual general meeting was almost exclusively formal, whereas in the first years of the Society's existence matters other than scientific had to be decided.

Whereas the attendance at meetings had been maintained he would like to see evidences of greater anxiety on the part of members to present communications. There was ample scope in such a subject as that to which the Society devoted itself for original thought, and it would generally strengthen the position of the Society if members would give their earnest consideration to that point.

There was a continued increase in the number of members of the Society, there being a total of 91 at the present time as compared with 85 at the same period last year, showing a nett increase of 6. One honorary member had been elected. The Society had to regret the loss of one member by death and three others had resigned.

The Council had appointed a committee to consider "The Etiology of Contracted Dental Arches." It was hoped that the report would be ready for presentation at one of the meetings next year.

He took the opportunity of thanking all those whom he had prevailed upon to allow their names to appear on the agenda papers as well as those who had helped in other ways, and hoped that they would consider any undue persistence on his part to be the result of his desire to make the meetings as successful as possible.

On the motion of Mr. Morris, seconded by Mr. Visick, the report of the Hon. Secretary was adopted.

Casual Communications.

Mr. C. S. Morris communicated "A case of root movement," and exhibited slides illustrative of the case.

A Case of Root Movement.

By Mr. C. S. Morris.

Mr. Morris said that the case presented was one which showed the movement bodily of the upper central incisors and laterals. The patient had a post-normal bite to the extent shown in slide 1. The fan-shaped appearance from the front could be seen in slide 5. The palatal aspect in slide 2 shows clearly how near the median line the apices of the laterals were. Adjusting the occlusion by intermaxillary elastics was tried, though with little hope of rectifying the deformity, and when, as was expected, the result was anything but satisfactory, it was decided to move the incisors bodily into the correct position. The laterals were first rotated and at the same time the apices moved towards the canines. This was done by fixing the canines rigidly together and from these bars were fixed, running about one-third of an inch up over the alveolar process protected with studs on the ends. The laterals were banded and similar bars with studs put on. The drawing shown on slide 5 gives an idea of the apparatus. Elastics were placed on, running from the stud on the lateral to that on the canine on each side. These elastics were used to move the apices outwards. An elastic also was run from lateral to lateral on the palatal side to rotate them at the same time. When this was complete an apparatus was put on as shown on page 341 of Case's "Dental Orthopedia," 1908 edition. With this the apices of all four incisors were pro-

Fig. 1. (Before treatment).

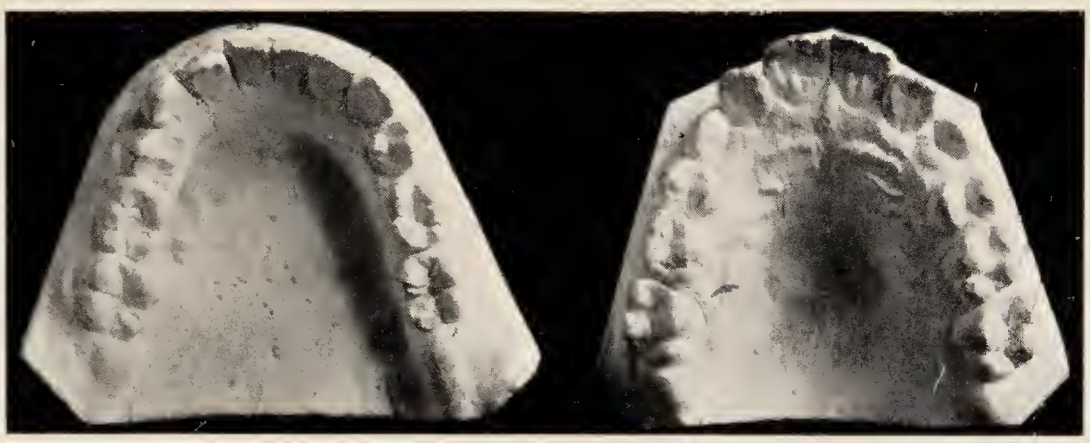


Fig. 2. (Before treatment).

Fig. 3. (After treatment).

To illustrate Mr. C. S. Morris' Communication.

A Case of Root Movement.

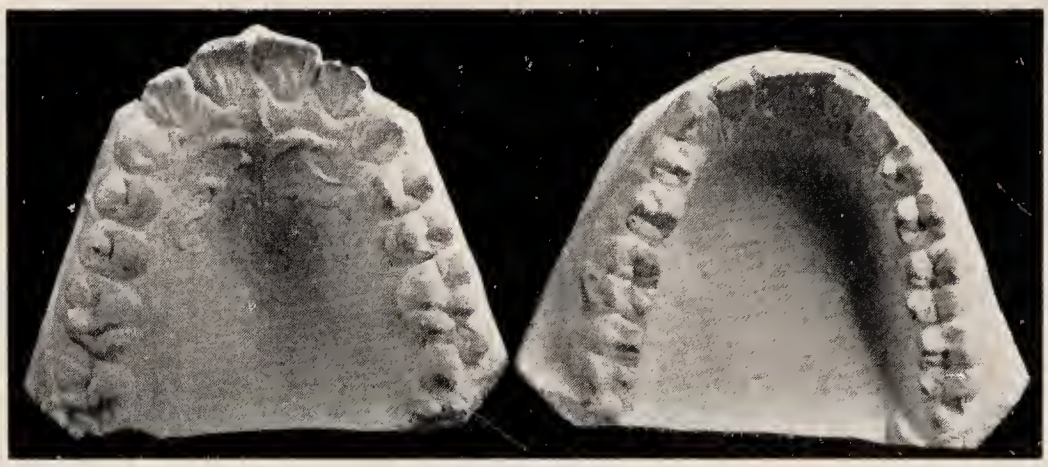


Fig. 4. (After treatment).

Fig. 5.

To Illustrate Mr. C. S. Morris' Communication.

truded while the incisive tips were retruded. The final adjustment of the teeth was attained by the use of an apparatus much like Dr. Angle's " working retainer."

When complete a retention apparatus was put on as shown on page 380 of Case's work, subsequently this was replaced by four complete bands soldered together and fixed to the bolts of D bands on the molars.

Slides 1 and 2 show case before treatment, 3 and 4 after.

The interesting point was that movement of the apices could be done comparatively easily. The difficult part of the matter was to retain them in the position they were in when the case was finished. It would be remembered that the whole tooth could move in almost any direction, as it necessarily followed that there must be a very large socket left. The right lateral had moved through a breakage towards its original position. He did not know then that he would advise anybody very hurriedly to undertake a case similar to the one he had just shown. It certainly gave him a lot of information, but also a great deal of trouble.

Mr. Harold Chapman said Mr. Morris's case was one of the first which had been shown to the Society involving a direct movement of the roots. He had just examined the models and the result was very pleasing, the roots undoubtedly being moved to a considerable distance. He desired to ask Mr. Morris the reason for rotating the laterals in the way he had described rather than treating the case with bands and spurs in the usual way—whether that would have involved the use of further apparatus requiring an extra period of time, or if Mr. Morris had some other object in view. It seemed to him (Mr. Chapman) that the laterals could have been rotated by means of spurs and bands ligatured to the arch.

The President thought great credit was due to Mr. Morris for having the pluck to try the method he had just shown. He himself had seen Dr. Case's illustrations on many occasions, but he had never had the pluck to follow them. He thought the result of Mr. Morris's treatment was excellent, although Mr. Morris evidently thought it so very difficult and had so many objections that he did not recommend the members generally to try it. He (the President) supposed the only other treatment which could have been adopted would have been to have put on reciprocal traction in the ordinary way. Although that would have rectified the bite it would not have brought the tips of the roots of the upper lateral and central incisors forward as Mr. Morris wished to do. He took it that was the point.

Mr. Morris replied in the affirmative.

Mr. Ralph Chapman enquired if Mr. Morris considered there might be any trouble in the future with the pulp on account of the apex having been moved so far ; and also if there was not more likelihood of periodontitis starting at an early age through moving the tooth bodily through so much bone.

The President further enquired of Mr. Morris if, when he put on an apparatus which was difficult to keep clean, he gave the patient a prescription for an antiseptic mouth wash and instructions that it should be used very freely and frequently. It was his (the President's) practice always to do so. He gave a prescription containing formalin and instructed that the bands should be well washed out at least twice a day with the solution and a brush.

Mr. Lacey enquired how long Mr. Morris would keep a retention on in a case similar to that which he had shown, and whether it would not have to be kept on for a very lengthy time. He would also like to ask if there was not some difficulty in getting the apparatus on, and also if there would not be decay in the approximal spaces.

Mr. SCHELLING enquired what was the thickness of the bands, and whether Mr. Morris put on the six bands one by one or at one time.

Mr. MORRIS, in reply, said with regard to Mr. Harold Chapman's question, the reason why he had not used the ordinary apparatus suggested by Angle for rotating was that he wished to move the apex at the same time. It would be remembered that the apices of all the laterals were well towards the median line. He did not merely wish to rotate them, he wanted to move the apices towards the canines. That could not be done with an ordinary apparatus, and that was why he chose the method he did, in order to get the apices of the laterals well away from one another before he put on Case's apparatus, because the latter would not allow the apices to be moved sideways as well as tipped forward.

With regard to the President's remarks, he had not wished in the least to over-emphasize the difficulty of the treatment. He would do it again to-morrow if he had a similar case, and he thought he should divide the difficulties at least by three. He had learnt a great deal by treating the case he had just shown. The result in that case had been extremely pleasing ; not merely was that shown on the models, but the appearance of the patient had been enormously improved. He had first pulled in the upper front teeth till they met the lower front tooth, but the treatment had elongated the centrals and made the appearance extremely ugly. The only thing left to do in order to get any kind of pleasing result was to move the apices in the jaw, which he set about to do. With regard to the President's second point—the question of keeping the apparatus clean—he always instructed patients to clean the apparatus thoroughly well after each meal and to use a mouth wash containing chinosol, 1 in 800.

Mr. Ralph Chapman had wondered whether there would be any risk of periodontitis through moving the tooth bodily through so much bone. There was not any appreciable amount of disturbance in his (Mr. Morris's) case, but whether there would be any subsequent mischief he did not know. But as soon as ever an injured joint was put into a fixed splint it began to mend, especially in young subjects, and he had no doubt that there would be no bad result. The patient's teeth were comparatively firm, and no one would imagine they had been moved so much.

Mr. Lacey had asked about the length of time of retention. With an apparatus similar to that he had shown, double the length of time was necessary to that required when an ordinary apparatus was used. He was going to keep his apparatus on for three years.

Mr. Schelling had asked about the thickness of bands. Those bands were made of iridio-platinum and were 3/1000 of an inch, so that they could be very easily put on the teeth side by side. In fact for the fixed apparatus of Case's they had to be side by side in order that the solder could run in between the bands and make a solid stud which could be left to hold the apparatus up against the backs of the teeth. It would be noticed that the studs in between were solid.

Somebody had made a remark about getting the apparatus on. Of course, it was difficult to get on, but the teeth being loose they allowed for a certain amount of movement. He (Mr. Morris) would not again use Case's apparatus for retention. Case's point no doubt was to make a sightly apparatus, but he (Mr. Morris) thought it too difficult to make and fix, and also it was very difficult to keep clean.

One gentleman had asked about the possibility of decay in the approximal spaces. In the approximal spaces the retention apparatus was cut away, arched from underneath, so that it did not come down to the gum. It was only made to be in contact with the teeth where it could be in contact over the whole of the surface which was covered.

with the cement. It was a well-fitting apparatus, and everybody knew that bands which were pushed on to a tooth and then hammered and burnished could be made to fit like a glove ; in fact, they were exceedingly difficult to get off sometimes. Therefore, if, in addition to that, it was polished away from every part where there was likely to be any ill fit, no difficulty was experienced in keeping it clean and no appreciable amount of washing out of cement took place.

Effects of the Premature Loss of the Deciduous Teeth upon the Occlusion of the Permanent Teeth.

By Mr. B. Maxwell Stephens, L.D.S.

Throughout the organic world it is not possible to consider effect without considering cause also.

In this short paper therefore, I have perforce coupled the two.

The paper is purely of an introductory nature and intended to act as a stimulus to our memories.

How many times during a busy day do we not endeavour to make a mental note of some clinical point, bearing upon the theoretical side of our work ? And how many times by the evening do we not find that it has eluded us ?

I hope, however, that before the end of this communication some of these lost impressions may have been recovered, and that in the subsequent discussion many points of interest may be brought to light.

First let me speak of a constitutional factor that leads to the premature loss of many deciduous teeth. I refer to hereditary syphilis. This disease brings about the early eruption of the teeth, but by reason of the undeveloped condition of their roots, and the lack of alveolus to hold what there is of them, they are often speedily lost. So terrible and disorganizing, however, are the effects of this scourge upon the dentition generally, that here it would be unsatisfactory to attempt to do more than mention it.

The condition which most strongly compels our attention as a predisposing cause is caries.

Highly-strung children come to us with cavities in their teeth, which, with an inward pang, we discern at once will lead to an exposed pulp.

With a store of enthusiasm and patience, we humour the children and proceeding with our favourite method, during several visits we remove the chief portion of that pulp and stop the tooth.

All *may* be well !

But the children perhaps, have discounted our best efforts by their restlessness, or they have come too late ; infection of the root canals and alveolus supervenes, and back they come to us with periostitis, or even an abscess. In my own experience there is little hope for that tooth, and out it must come sooner or later. For the sake of the child's vitality, "*sooner.*" For that of the permanent dentition, usually "*later.*"

Now gentlemen, to put it as concisely as possible, the premature loss of a deciduous tooth results in the shortening of the dental arch ;

that is probably accomplished by a combination of the following factors :—

(*a*) The gradual movement of the teeth on either side of the space towards each other.

(*b*) The loss of interstitial growth in the alveolus, due to lack of stimulus.

The upper incisor and the canine teeth play their part in maintaining the maximum development of the arch, chiefly by holding out beyond the lower teeth that portion of alveolus in which they are situated. In their case there is not the same wedging action to cause interstitial growth in the alveolus as in the case of the temporary molars.

Let those inclined to indulge in dogma observe this portion of our subject and follow the tendencies developed by the early removal of deciduous teeth in the cases I am showing.

Speaking of the upper central incisors, as far as I can judge from a limited number of cases, no great amount of harm occurs to the arch unless these teeth be lost before the absorption by their successors has become well established. I would, however, ask members to bring forward cases from their own experience.

The first case is that of a boy, now $11\frac{1}{2}$ years old, who fell from a window seat when aged fourteen months, and knocked out the right upper lateral incisor. The case is complicated by the habit of thumb-sucking ; this is responsible for the present condition, classified by Dr. Angle as Class II., Division I. What I wish you to notice, however, are the two pencil marks showing approximately the loss of space in the region of the lateral. (Figs. 1, 2.)

The case is still under treatment, so I will show you slides of the radiograph and the subsequent models (Figs. 3, 4, 5.) In this radiograph you see that the blow which was received in the premaxillary region shattered the hopes of the developing incisor, making it a cripple. It is dilacerated.

The next slides (Figs. 6, 7) show the result of losing two deciduous canine teeth prematurely. As the patient did not return, to allow me to fix devices to maintain the spaces, they have almost been lost and the permanent canine teeth are erupting outside the arch.

In the lower jaw the complication of the narrowed arch is due to the presence of only three permanent incisors. One of the deciduous central incisors existed as a fused abortion and was removed early ; this probably accounts for the missing member.

The following slides show the result of prematurely losing the left upper temporary molar. I removed it on account of a bad abscess one morning when the child was leaving for Scotland. She was then $4\frac{1}{2}$ years old, since that time the space for the second premolar has been entirely lost, and the shaded portion of the palate shows its position when the model was taken. (Figs. 8, 9, 10.)

An abscess again, at the root of the right lower second premolar, forced me two years ago to remove that, and for the convenience of the occlusion I removed also the corresponding teeth on the opposite side.

Under Angle's classification the case originally may be placed in a sub-division of Division I. Class II., the occlusion of the first permanent molars being normal on the left side and prenormal on

Effects of the Premature Loss of the Deciduous Teeth upon the Occlusion of the Permanent Teeth.

Fig. 1.

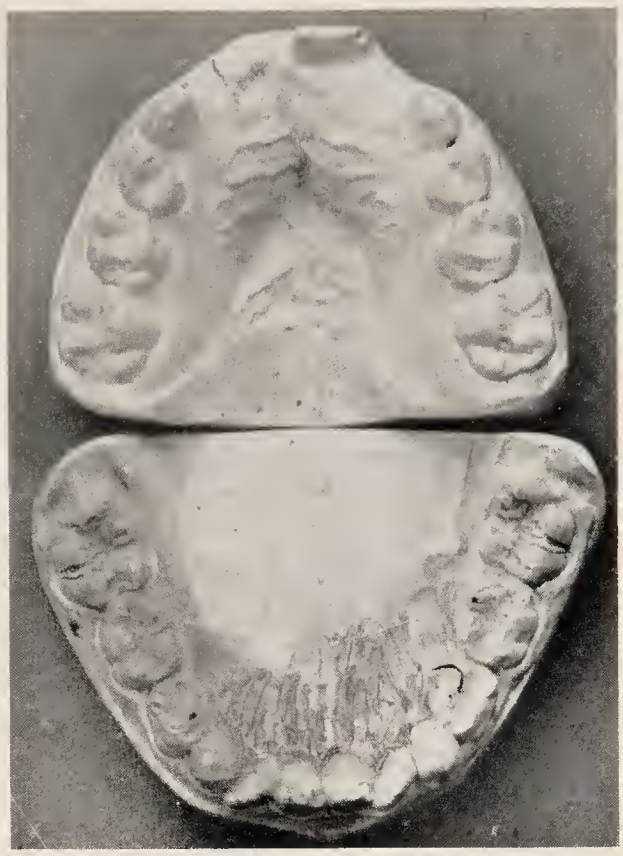


Fig. 2.

Fig. 3.

To Illustrate Mr. B. Maxwell Stephens' Paper.

Effects of the Premature Loss of the Deciduous Teeth upon the Occlusion of the Permanent Teeth.

Fig. 4.

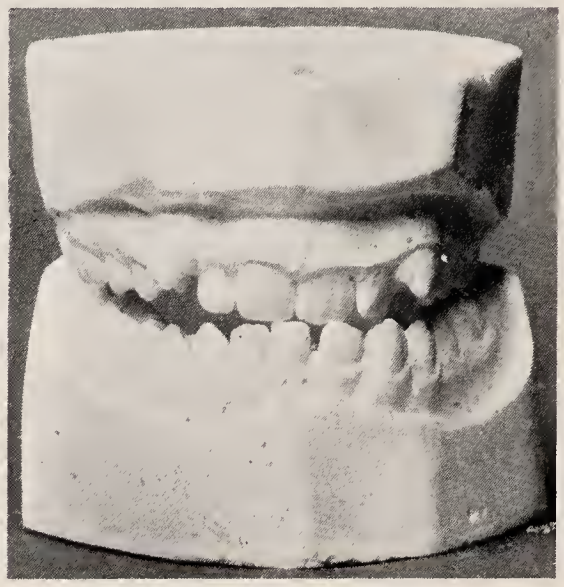


Fig. 6.

Occluded thus to show missing lower central incisor.

Fig. 5.

Fig. 7.

To Illustrate Mr. B. Maxwell Stephens' Paper.

Effects of the Premature Loss of the Deciduous Teeth upon the Occlusion of the Permanent Teeth.

Fig. 8.

Fig. 10.

Fig. 9.

To Illustrate Mr. B. Maxwell Stephens' Paper.

Effects of the Premature Loss of the Deciduous Teeth upon the Occlusion of the Permanent Teeth.

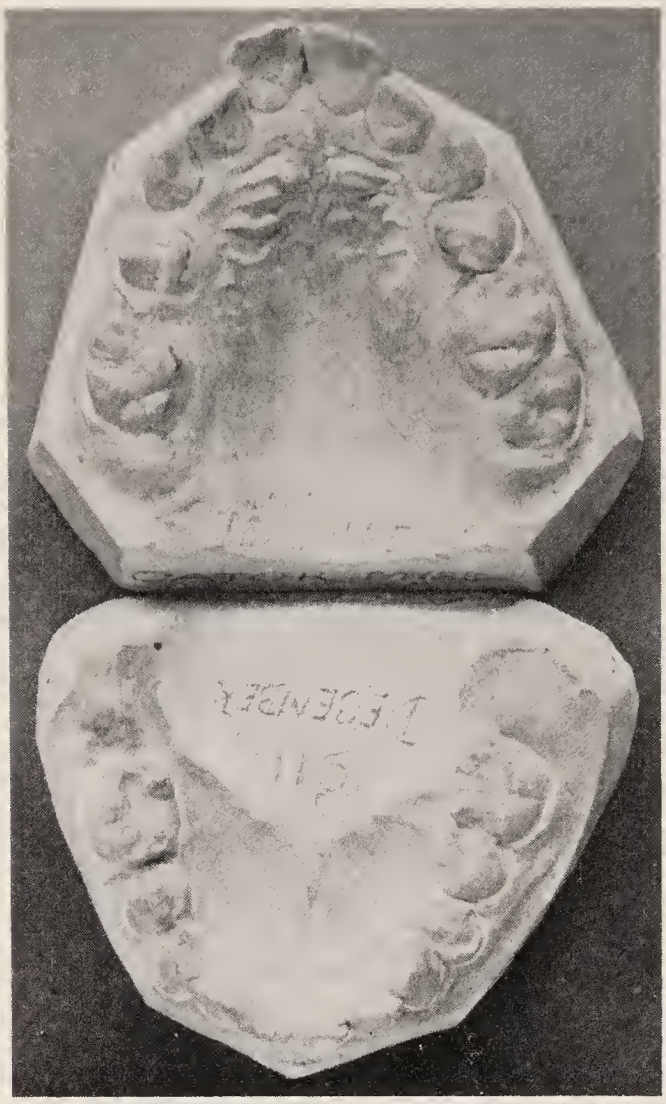


Fig. 11.

Fig. 12.

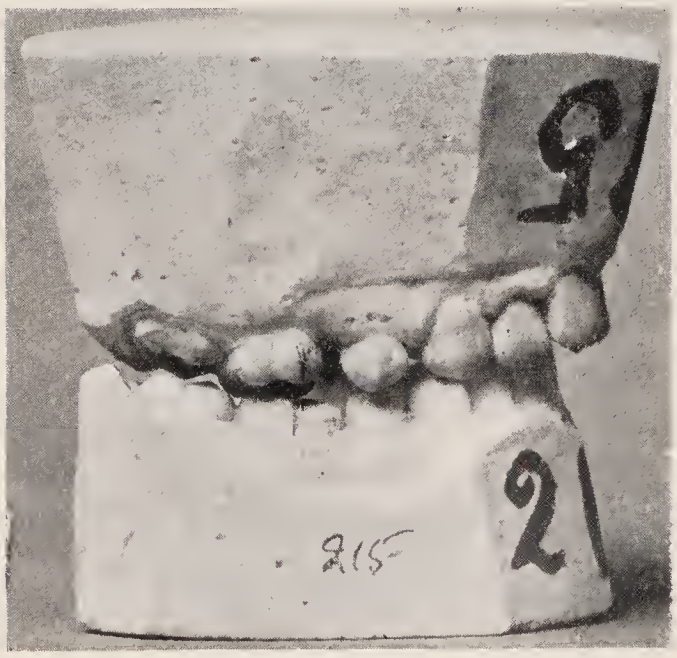
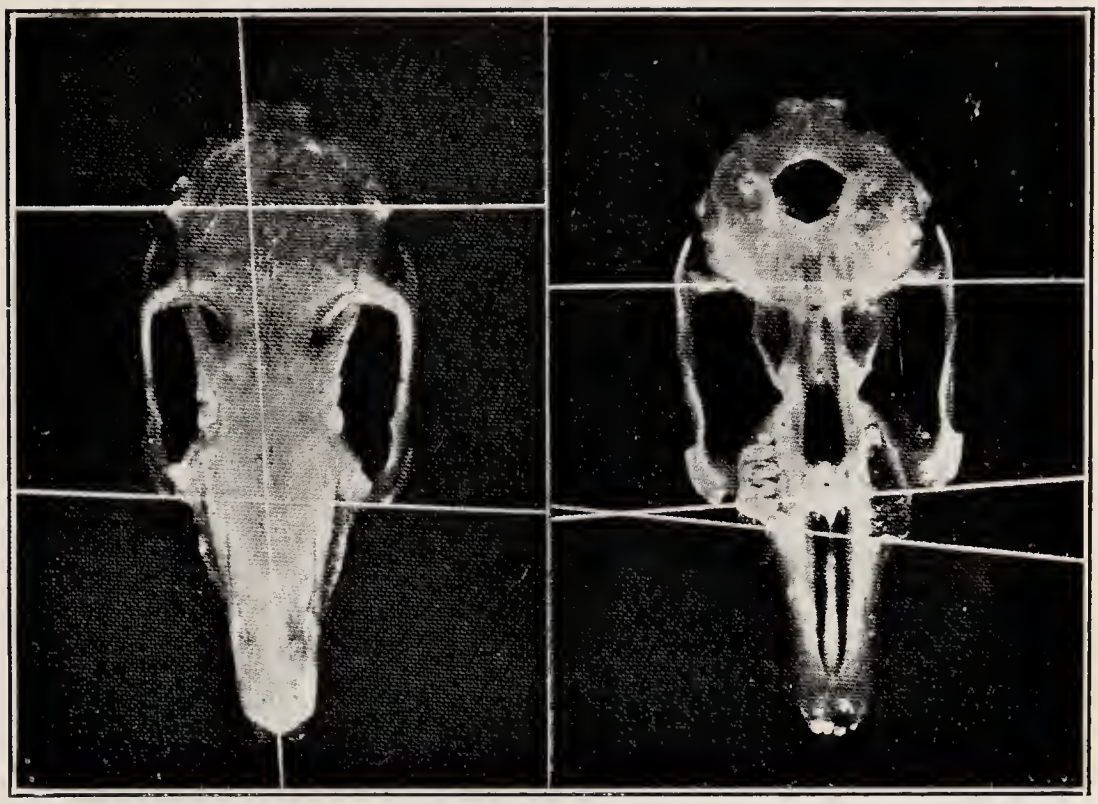
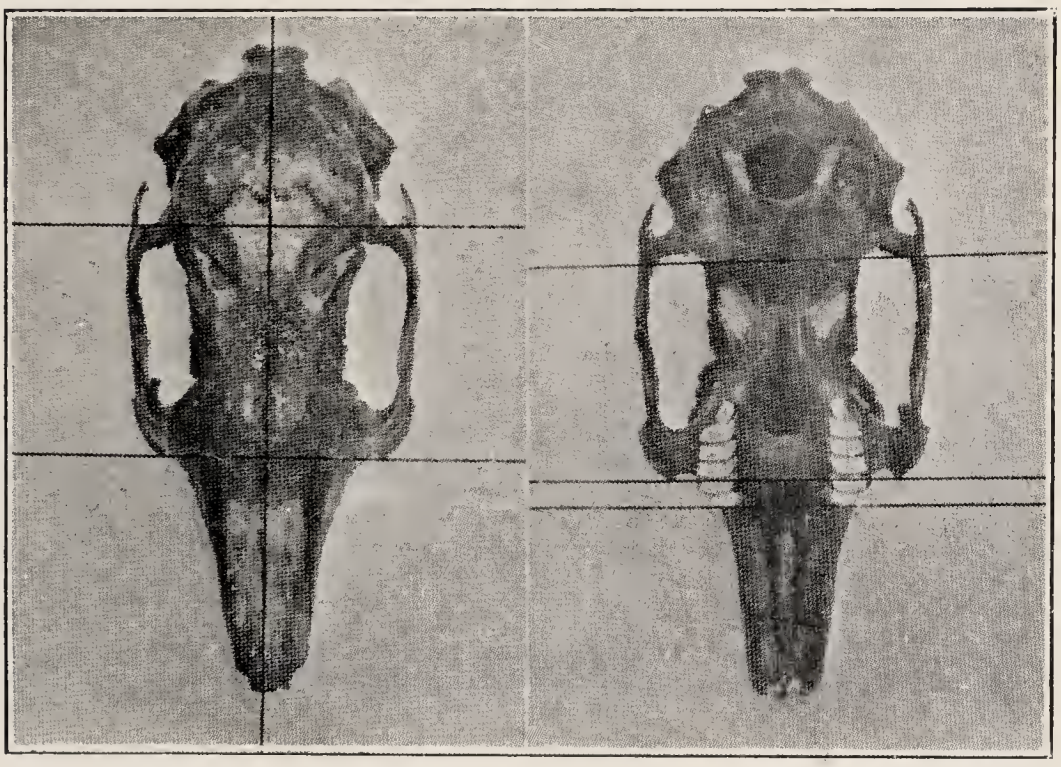


Fig. 13.

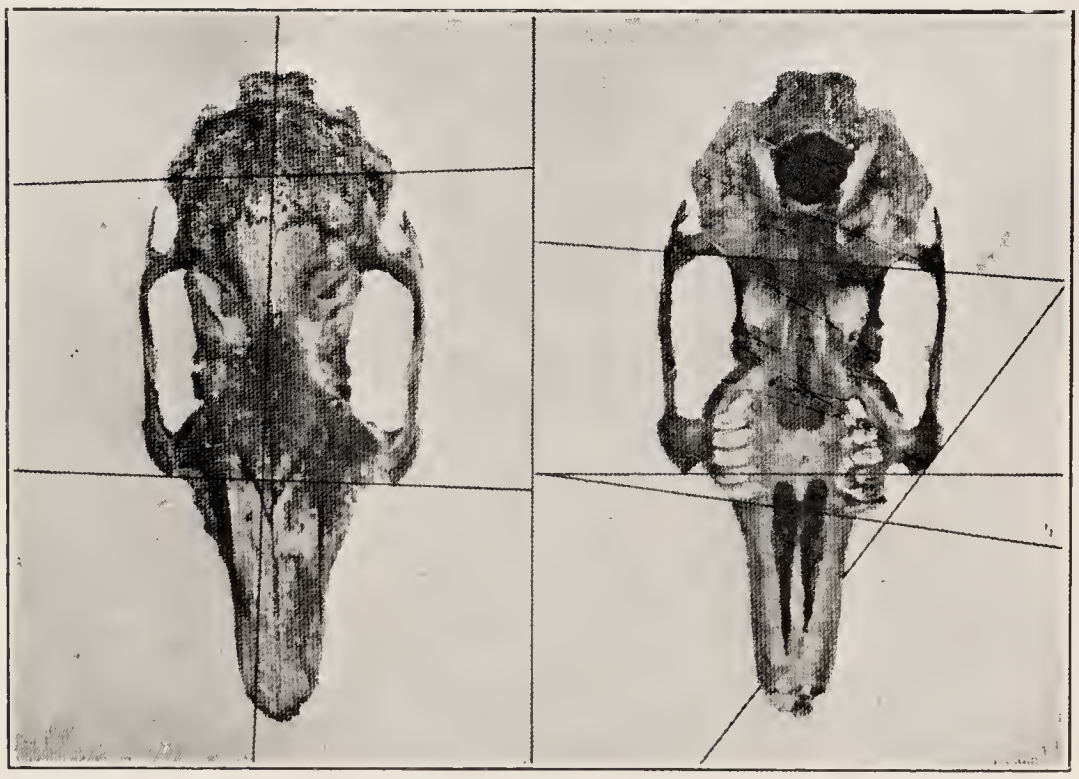
To Illustrate Mr. B. Maxwell Stephens' Paper.

Effects of the Premature Loss of the Deciduous Teeth upon the Occlusion of the Permanent Teeth.





To Illustrate Mr. Harold Chapman's Remarks in the Discussion of Mr. B. Maxwell Stephens' Paper.



Illustrations from *Items of Interest*.

Effects of the Premature Loss of the Deciduous Teeth upon the Occlusion of the Permanent Teeth.

Male. Age 4·9.

No. 1A.

Male. Age 9·9.

No. 1B.

Male, Age 10.

No. 2.

Female, Age 13.

No. 3.

To Illustrate Mr. George Northcroft's Remarks in the Discussion of Mr. B. Maxwell Stephens' Paper.

right, owing to the early loss of the deciduous molar.

By the subsequent slides can be seen how far latterly the case has improved under treatment. (Figs. 11, 12, 13.)

Gentlemen, I know that I have omitted mentioning very much that is of importance, but in doing so I have had the subsequent discussion in my mind, and I felt that the primary object of the paper was to form a backbone for that discussion.

Discussion on Mr. Maxwell Stephens' Paper.

Mr. Northcroft said it struck him on looking at the first series of models that Mr. Stephens put down to the extraction of the teeth something which could rather be described as non-development of the jaw, from other causes. Especially was that the case with one of the models exhibited where the upper canines were crowded out of the arch.

He had brought a few models to confirm the view which Mr. Stephens had expressed of the danger due to the early loss of temporary teeth. He desired first of all to show a model of a case of a child at four years and nine months, which bore out one of the points which Dr. Bogue mentioned where lack of interdental space foreshadowed a crowded permanent arch. The case was interesting in that it showed a symmetrical extraction of the first lower temporary molars, in which he did not carry out his usual practice of inserting a vulcanite splint to hold the space. It would be seen that the result of the extraction of the temporary molars caused the incisors and the temporary canines to fall backwards and not, as was so often imagined, the back teeth to come forward. Illustrations Nos. Ia and Ib.

Another case showed the result of the extraction of all the temporary teeth at the same time. The mother had kept the temporary teeth, and out of curiosity he asked to be allowed to see them, and the principle of the extraction of temporary teeth in fear of oral sepsis had been carried to very exaggerated limits. The teeth could all have been saved, and he considered it absolutely criminal that they should have been taken out. The case, however, had been complicated by the fact that the child had post-normal occlusion. The result was very disastrous, and the members would notice the enormous loss of space. He was glad to say that the child's jaws were expanded to the limit, and some day he hoped the jaws would contain thirty-two perfect teeth. The child had not yet erupted his wisdom teeth. Illustration No. II.

The next case was again one of loss of space due to the early extraction of a right lower temporary molar where the lower incisors had fallen back, although the molar series remained in perfect occlusion. The case was remedied by first of all diagnosing the condition correctly, and remedying the defect which was diagnosed. That restored the jaws to their normal balance and a perfect result was obtained. He would proceed to show a few slides. Illustration No. III.

Mr. Sheldon Friel said he had been very interested to hear Mr. Stephens' paper on the effects of premature loss of deciduous teeth, especially as he thought it was one of the greatest causes of irregularities. He used the term "irregularities," as he did not think the bone was actually affected, but that only a mere drifting of the tooth in the jaw took place. Mr. Stephens had shown a case where a bicuspid was going to erupt and he had classified the case as a Class II., Division I., Sub-division 8 of Angle's, on account of the molar being in normal occlusion. He thought Mr. Stephens had made a mistake, because the molar had only moved through the jaw, and that it should have been pushed back, in his mind, and then classified as a case of Class II., Division I. There was one form of irregularity, which unfortunately was not very uncommon, and which was very difficult to cure, namely, outstanding

upper canines. There were two forms of that irregularity, the first of which was where the teeth posterior to the canine had drifted forward, and, secondly, where the anterior teeth had drifted distally towards the canine space. He thought such cases came from different causes. From the models he had, he believed the first case came either from the extraction of the deciduous second molar or from the extraction of the first deciduous molar, and not from the extraction of the temporary canine. He thought the resistance of the two deciduous molars and premolars underneath them and the occlusion would be sufficient to prevent those teeth drifting forward, but if one of the temporary molars was taken out at a certain age, it would drift forward to a certain extent, and the upper molars would erupt, causing the absorption of the first deciduous molar and the canine. The second instance, where the front teeth had drifted back, was, he thought, the result of the extraction of the deciduous lateral or canine, or both, and not the result of the extraction of the posterior teeth. In the lower jaw, when the first or second temporary molar was taken out, it did not always follow that the teeth anterior to it came back, because he had lately come across two instances where the six-year molars had come right forward, and he thought it must depend upon the time that the temporary teeth were taken out as to how far the permanent molars erupted forward.

Mr. Harold Chapman said he was especially grateful to Mr. Stephens for his paper, as he had had to prepare it at very short notice. He (Mr. Chapman) wished to touch on the point to which Mr. Sheldon Friel had just referred. He thought that the irregularity due to the loss of the temporary teeth was purely due to the remaining teeth drifting back into the spaces created, but he (Mr. Chapman) could hardly agree with that ; there was evidence that lack of development of bone was also a contributing cause. Lawrence Baker, according to one of the journals, had made a number of experiments on a litter of rabbits. He could not remember the details, but the gist of the article was that he made one or more rabbits unfunctional on one side by grinding down the teeth, leaving the other side functional. In addition to doing that, several of the other animals were used as controls, and they were killed at corresponding times and the results contrasted. He desired to show a few slides.

The first slide showed the effect of leaving one side functional and putting the other side out of action. There was considerable lack of growth shown on the left-hand side on the left-hand figure and on the right-hand side on the other figure. The arch was very much shortened and the positions of the teeth were also at variance on the two sides.

Slide 2 showed one of the control animals in which everything had gone on normally, both sides developing fully and equally.

Slide 3 was that of another rabbit in which the development had been markedly asymmetrical. There was no other way to account for it except lack of use or lack of function, which had prevented the development in those parts. Not only had it affected the development of the jaws themselves, but of all the bones associated with them.

He would now show slides to compare the effect of removing the second deciduous molar in one case and the first deciduous molar in another case.

Slide 4 showed the result of the removal of the second temporary molar. In the first case the distal tooth had drifted forward into what appeared to be the normal position, closing up the space. The case was one of Angle's Class II., Division II., or a spurious Class I. He thought there could be no doubt that had happened on account of the occlusion of all the other teeth. The slide showed the space between

the right molar and premolar considerably closed, and it would also be seen that it was less than normal on the other side. In his opinion that was due to the forward movement of the molar and not to the distal movement of the premolar and canines.

The second case showed the distal movement of the anterior teeth due to removal of the first temporary molar. The cases shown in the slide appeared to agree with those which had already been exhibited, in that the removal of the second temporary molar allowed the distal tooth, that was, the first permanent molar, to drift forward, whereas the removal of the first temporary molar allowed the anterior teeth to drift backwards. The next slide showed the occlusal view of the previous case, the canine and laterals not only drifting backwards, but also falling inwards. He thought it was clear that the arch of the lower jaw in the canine region was not so well developed as it was on the other side, where there was ample room for the erupting premolar, and there would be still more room when the second temporary molar came out.

The PRESIDENT said it was but very seldom that he had had to extract temporary teeth before the proper time for their departure, and it seemed to him that in the vast majority of cases temporary teeth could be kept until their proper time, but he had brought models to the meeting of a case of a patient who was about six or seven years old when he had to go to her home to see her. She had an enormous abscess on the left side of the upper jaw. He took out both the left upper temporary molars to relieve the abscess, which was an extremely bad one, blocking up the eye and turning the face black and green. His impression was that the jaws were well developed and the temporary teeth perfectly regular. The result was that the girl in due time became a regulation case. The irregularity was all on the side where the temporary molars had been taken out. Both the jaws were expanded with screw plates. He had by chance seen the patient that day, but unfortunately he had not had time to take impressions of her jaws, but he was glad to see there was no trace of the irregularity left and the teeth were absolutely in normal occlusion. She was now about seventeen years old.

Mr. C. S. MORRIS said he had been very much interested in the models showing the drifting back of the lower front teeth, and he entirely agreed with Mr. Chapman when he demonstrated the fact that it was only when the first temporary molar was removed that the front teeth drifted back. If the second temporary molar was removed, the first permanent molars came forward. He had two cases in mind, one of which was that of a South African boy who never looked after his teeth, but simply pulled them all out. He got into difficulties, and his second temporary molars were badly decayed, and his first temporary molars and lower canines disappeared. When he saw the boy his four incisors were well back. His canines, of course, came up afterwards, and they were likewise well back, almost in contact with the second temporary molars. In the other case the patient had lost the second temporary molars and the first permanent molars were tilting forwards and inwards. With regard to the loss of teeth on one side, unquestionably if the temporary teeth on one side were not used, that side would show a lack of development, the arch would be shorter from the median line to the first molar. He had a model in his hand showing where the jaw on the right side had lost the first two temporary molars, with the result that the canine erupted well inside. There was a markedly straighter arch on the right side than on the left, and unquestionably the presence of the temporary teeth until the proper time produced the development of the bone. If he was forced to take out

any temporary teeth on account of very bad caries he now almost invariably held the space. He had not used Mr. Northcroft's apparatus. He thought it was a good apparatus, but still he found a child was inclined to leave such things about. He had no doubt, however, that it was a better method than a fixed apparatus to retain the space, because the pounding away of the alveolus would produce some kind of development.

Mr. RUSHTON suggested that the further discussion of Mr. Stephens' interesting paper should be postponed until another evening, and he moved a motion to that effect.

Mr. MORRIS seconded the proposition, which was carried unanimously.

The PRESIDENT then delivered his

Valedictory Address.

GENTLEMEN, the time has come for me to say good-bye to you as President of this Society. It seems a very short twelve months since you were good enough to place me in this honourable chair. Your kindness and consideration throughout, coupled with the able and untiring services of the other officers, have made my task a light and pleasing one. The hope I expressed at first that the session would prove a useful and prolific one has, I think, been amply fulfilled. The committee on classification of irregularities has presented the fruits of its labours and a new committee on etiology of contracted arches is now at work. Among the valuable communications made is a remarkable and stimulating contribution from our hon. member Dr. Bogue, in the form of a condensed summing up of his mature conclusions after many years of enthusiastic study. It refers chiefly to the etiology and treatment of that very important condition which we call the contracted arch and which is so constantly associated with adenoid excrescences in naso-pharynx, inducing mouth-breathing. Such a collection of "Dicta" is like a series of guideposts firmly driven over a mountain pass and which stand clear to guide the traveller. They are moreover bound to excite the critical interest of others coming after, whose thoughts will be concentrated upon them to enquire whether some might not be placed in better positions and some, perhaps, uprooted altogether. It is the pioneer post-driver who deserves the greatest meed of praise. My own impression is that most of these particular posts will remain pretty much where they are for a long time, and the primary discussion they evoked was animated and interesting. The need for gaining the interest and co-operation of other workers in branches of medicine not strictly dental is shown by the valuable part contributed by Mr. Lambert Lack; and his obvious appreciation of Mr. J. S. Turner's work was very gratifying. Co-operation is ardently to be wished for, elucidating many of the problems which are acute at the present time. For instance, the effects of very early removal of adenoids on jaws and teeth and also on the naso-pharynx itself; the effect of artificial expansion of the superior maxilla on width of nasal fossæ and shape of septum; the effects of administering thyroid extract on adenoids and enlarged tonsils and on the growth of jaws. We want to know the incidence or otherwise of adenoids in all countries; do they occur in Egypt, where the air is always dry? Or at altitudes where the

air is always pure ? In fact, we want to know the cause of adenoids. What is the effect on the permanent teeth of early extraction of temporary molars ? We want a history carefully taken and recorded of each case of contracted arches coming under our notice, particularly with regard to presence of adenoids or whether there has ever been an operation for adenoids or tonsils, and if so, at what age. Whether certain types of contracted arch are always associated with adenoids and others not. Whether types of open-bite with obtuse angled lower jaw are so associated. Whether cases of overgrowth of lower jaw are associated with tonsils and adenoids. Whether habitual mouth-breathing ever exists with perfect dental arches. Whether early expansion of arches, removal of adenoids and correction of breathing is generally followed by a permanently healthy post-nasal mucous membrane. The influence of enlarged tonsils on the position of the lower jaw as distinct from the influence of adenoids. Whether under any conceivable circumstances, such as the patient being too old, the tendency to revert after expansion is insuperable. Whether in a very young patient when nasal breathing is properly restored and arches properly expanded, there is any tendency to revert. What is the influence of heredity in determining post and ante-normal occlusions ? In cases where there is a hereditary disproportion between jaws, whether it is the jaw deformity which is primarily hereditary, or whether it is some etiological factor which is primarily hereditary, like a tendency to adenoids or contracted nasal meati. Here are fields for observation and study and many meetings of this Society will take place before they are completely investigated.

At the meetings members might remember that casual communications unlisted and unannounced are always welcome and are taken before the advertised matter of the meeting. The unexpected is often the most agreeable and comes as a pleasant surprise. I should like to see more problems in practice brought up and more models of cases under treatment and after treatment.

In conclusion, I offer my best thanks to the officers for their self-denying and effective labours during the session, and particularly to the hon. secretary, Mr. Chapman, who has done yeoman's service, and to the members for their kindness and courtesy throughout. I also have the pleasure of offering my congratulations and best wishes to our on-coming President, Mr. Montague Hopson, under whose banner I am sure the honour and interests of the Society will be well safeguarded.

Mr. Rushton proposed a vote of thanks to the President for his address. It was full of very interesting thoughts and queries the solution of which would keep the Society busy for many a long year to come. He also wished in the name of the Society to thank Mr. Baldwin for his work during his year of office just drawing to a close. Under his leadership the Society had advanced and made solid progress. The members had had most delightful evenings and Mr. Baldwin had been a source of encouragement and help to them all.

The motion was then put and carried with acclamation.

The President briefly acknowledged the vote.

On the motion of Mr. GEORGE THOMSON, seconded by Mr. STEPHENS, a vote of thanks was accorded to the other officers of the Society for their services during the past year, special emphasis being laid on those of Mr. Chapman.

Mr. Chapman briefly thanked the meeting on behalf of his fellow officers and himself.

INDUCTION OF THE NEW PRESIDENT.

Mr. Harry Baldwin then vacated the presidential chair which was taken, amidst applause, by Mr. Montagu Hopson.

Mr. MONTAGU HOPSON said he understood his only duty that night was to adjourn the meeting and to announce that the next meeting would take place on January 8th, when he hoped he would have the opportunity of expressing to the members his sincere thanks for the honour they had done him in placing him in the presidential chair.

Adjourned till January 8th.

List of Members of the British Society for the Study of Orthodontics.

Aubrey, H. P.	40, Curzon Street, Mayfair, W.
Austen, Leslie G.	Cambridge House, Portsmouth.
Badcock, G. W.	32, Brunswick Place, Hove.
Badcock, J. H.	140, Harley Street, W.
Baldwin, H.	37, Cavendish Square, W.
Barrett, Russell	41, Harley Street, W.
Bascombe, E. D.	Melford Lodge, Bourne Avenue, The Square, Bournemouth.
Bennett, F. J.	17, George Street, Hanover Square, W.
Bennett, G. Norman	50, Brook Street, W.
Blaaberg, Charles J.	27, Tavistock Square, W.C.
Bogue, E. A.	63, West 48th Street, New York, U.S.A.
Bowes, J.A.	28, South Side, Clapham Common, S.W.
Briault, E. H. L.	145, Finchley Road, N.W.
Bride, John	26, Duke's Avenue, Muswell Hill, N.
Bull, F. B.	Guys Hospital, S.E.
Campion, G.	264, Oxford Road, Manchester.
Campkin, Hugh T.	71, Harley Street, W.
Chapman, Harold	15, Upper Wimpole Street, W.
Chapman, Ralph	76, Grosvenor Street, W.
Clarence, Thomas H.	24, Upper Wimpole Street, W.
Clogg, Arthur H.	18, Central Hill, Upper Norwood, S.E.
Cribb, H. E.	15, Stratford Place, W.
Denham, N.	29, Albemarle Road, Beckenham.
Densham, Ashley B.	18, Stratford Place, W.
Doherty, J. W.	101, Worple Road, Wimbledon.
Edey, G. Russell	Jasmine Cottage, Chislehurst.
Farmer, F. M.	St. Winifred's, Hampton, Middlesex.
Fernie, J. G.	Holmleigh, 1, Murray Road, Northwood, Middlesex.
Field, George	117, Park Street, W.
Forty, A. Alan	26, Park Square, Leeds.
Friel, Sheldon	71, Lower Bagot Street, Dublin.
Goldie, George J.	95, Merrion Square, Dublin, Ireland.
Green, W.	South View, 10, North Common Road, Ealing, W.
Heath, Robert H.	29, Park Crescent, Portland Place, W.
Henry, P. F.	79, King William Street, E.C.
Highton, Herbert C.	17, Upper Wimpole Street, W.
Hopson, Montague F.	64, Harley Street, W.
James, W. W.	21, Park Crescent, Portland Place, W.
Jeffery, Louis	1, Newton Villas, Finsbury Park, N.
Johnson, Arthur W.	71, Grosvenor Street, W.
Johnson, Gordon	115, Harley Street, W.
Knaggs, S. A.	21, Rosslyn Hill, Hampstead, N.W.
Knowles, C. Heygate	15, Worsley Road, Hampstead, N.W.
Lacey, A. G.	Stedham House, Surbiton.
Lees, C.	Breifond, Boyne Road, Tunbridge Wells.
Lockett, A. C.	121, Harley Street, W.
McKechnie, J. D.	29, Queen Anne Street, W.
Mahony, H. Alvin	43, Manningham Lane, Bradford.
Malleson, H. C.	30, Thurlow Road, Hampstead, N.W.
Marsh, H. E.	1, Cantelupe Road, Bexhill, Sussex.
Mason, E. N.	Sandown, 306, Broadway, Bexley Heath.
Matheson, Leonard	22, Wimpole Street, W.
Mathews, E. F. Cale	60, Newhall Street, Birmingham.
May, Walter J.	24, Upper Wimpole Street, W.
Mellersh, W. Francis	28, Wimpole Street, W.
Morgan, Reginald C.	15, Woodsome, Totnes Road, Paignton.
Morris, C. S.	47, Upper Brook Street, Grosvenor Square, W.
Northcroft, George	115, Harley Street, W.
Parfitt, J. B.	179, King's Road, Reading.
Pavitt, P. G.	57A, Wimpole Street, W.
Payne, J. L.	18, Portland Place, W.
Pearce, F. J.	37, Queen Anne Street, W.
Philpots, Montague	14, High Street, Windsor.
Pollitt, G. Paton	50, Brook Street, Hanover Square, W.
Porteous, Hugh T.	15, Cavendish Place, W.
Preedy, E. J.	1, Hanover Square, W.
Rilot, Chas. F.	22, Wimpole Street, W.
Rowlett, A. E.	165, London Road, Leicester.
Rushton, W.	32, Harley Street, W.
Samuel, B. Barnett	76, Wimpole Street, W.
Schelling, C.	37, Cavendish Square, W.
Scobie, James	145, Finchley Road, N.W.
Scott, P.	1, The Mall, Wanstead, N.E.
Shattock, Chas. R.	Saville House, Sutton Court Road, Chiswick, W.
Shore, H. D.	30, Mount Nod Road, Streatham, S.W.
Spiller, J. E.	62, Worple Road, Wimbledon, S.W.
Spokes, P. Sidney	4, Portland Place, W.
Stephens, B. Maxwell	76, Grosvenor Street, Grosvenor Square, W.
Sturridge, Ernest	29A, Wimpole Street, W.
Tattersall, Harold	1, Sandwell Mansions, N.W.
Tebbitt, E. R.	4, Frant Road, Tunbridge Wells.
Thew, W.	140, Harley Street, W.
Thomson, George	38, Harley Street, W.
Turner, J. G.	59, Wimpole Street, W.
Turner, V. E.	Prince of Wales Road, Norwich.
Visick, Hedley C.	39, Brook Street, W.
Wallace, Dr. J. Sim	150, Harley Street, W.
Watson, A. MacDonald	3, Redcliffe Parade West, Bristol.
Wood, Bryan J.	7, London Road, Kettering.

11275/8/9/13.